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ABSTRACT

The basic research design reported in this paper includes technical substudies of the principal factors that affect a State's school finance program. Factors considered in this document include educational need and cost differentials among school districts, State and local taxation, the cost of delivering education, public school personnel, financing school construction, pupil transportation, school food service, and school district productivity. The basic rationale, research techniques, major findings, and conclusions are presented for each technical substudy. In the critique following the summarization of each study, attention is given to the adequacy of the overall research design, data requirements, and contribution of findings and recommendations to the total study, as well as to the general field of research in public school finance. The paper also describes the development of the final report on school finance and evaluates the effectiveness of the study. (Author/DN)

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AN ANALYSIS OF THE PROCESS AND METHODOLOGY OF THE DELAWARE SCHOOL FINANCE STUDY

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FOREWORD

This analysis of the study of school finance in Delaware has been conducted to provide the School Finance Task Force of the Office of Education with a description and critique of the process used in the study. Members of the Task Force can use this analysis in projecting needed research and also in considering alternative approaches which might be considered by states as they contemplate studies of their patterns for financing schools.

Background information was secured from the formal report submitted by the National Educational Finance Project (NEFP) to the Delaware State Board of Education and also from staff members in the Delaware Department of Public Instruction. Appreciation is extended to the NEFP staff members and Department of Public Instruction staff members who provided information for the analysis.

As the pressures for school finance reform continue, various study alternatives will undoubtedly be considered by state education agencies and other governmental and private agencies. The hope is that a model process can evolve which will permit cross-state comparisons of study results to facilitate the sharing of findings and conclusions and reduce the needless duplication in research efforts.

June 20, 1973

K. Forbis Jordan

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INTRODUCTION

The school finance study in Delaware was conducted by the National Educational Finance Project (NEFP) at the request of the Delaware State Board of Education. The National Educational Finance Project is financed by the U.S. Office of Education, Department of Health, Education and Welfare under the provisions of P.L. 89-10, Title V, Section 505. Additional funds for the study were provided by the Delaware State Board of Education from state sources; these state funds were used to supplement the NEFP Central Staff by securing additional consultants to conduct the special studies.

Background. During 1968-72 the NEFP conducted a national study of school finance. This effort involved an identification of the dimensions of educational need or the various educational programs which should be provided through the schools; analysis of the current status of school finance among the 50 states; a series of satellite studies to identify target populations, project changes in educational programs during the decade of the 70's, and compute cost indices associated with various educational programs; an analysis of revenue sources in terms of their equity and additional potential; and a comprehensive discussion of alternative approaches for state school support programs. During Phase II the NEFP has focused its attention on disseminating its findings and field testing various research techniques to expedite the improvement of state school finance programs. Intensive research activities are being conducted in six Cooperating States.

The NEFP is involved in field studies in individual states, is conducting additional depth research studies at the central staff level, and also is developing a prototype training program for state education agency personnel in the area of fiscal planning. All NEFP activities are integrated with the field studies providing various input data for the central staff research studies and also providing field experiences for the participants in the prototype training program.

During the spring of 1972 the governor of Delaware appointed a Citizens' Advisory Committee to study the existing pattern for financing the public schools of Delaware and to recommend appropriate changes. The Commissioner of Education contacted the NEFP to explore the possibilities of Delaware becoming one of the six NEFP Cooperating States. Following exploratory discussions, a formal arrangement was developed between the Delaware Department of Public Instruction and the NEFP. The NEFP's task was to conduct a technical study of Delaware's state school support program and present recommendations for improvement.

In early May 1972, members of the NEFP Central Staff met with the Commissioner of Education, selected members of his staff, and superintendents from the Delaware local school districts. During this meeting the overall research design and the working procedures for the study were explained. Reactions were positive, and the NEFP Staff was directed to proceed with plans for the study.

PARAMETERS OF THE STUDY

This study, Financing the Public Schools of Delaware, was one of the series of studies in six states being conducted during Phase II of the National Educational Finance Project. Primary responsibility for coordinating the Delaware study was assumed by Dr. Roe L. Johns, Technical Assistance Director of the National Educational Finance Project.

Components of the Study. In view of the range of activities in which the NEFP was involved and the desire to provide training experiences for developing school finance specialists, as well as the need to expand the manpower pool involved in various field research activities, additional personnel were identified to assist with the field studies. In the Delaware study the following persons assumed responsibility for the indicated technical components to supplement the research of the central staff:

Educational Need and Cost Differentials — Richard Rossmiller, Professor of Educational Administration, University of Wisconsin, Madison

State and Local Taxation — Rolland A. Bowers, Associate Professor of Educational Administration, University of Virginia

Cost of Delivering Education — Dewey Stollar, Professor of Educational Administration, University of Tennessee

Public School Personnel — James Jones, Professor of Educational Administration, Temple University, and William B. Castetter, Professor of Educational Administration, University of Pennsylvania

Financing School Construction — W. Monfort Barr, Professor of Educational Administration, Indiana University and William R. Wilkerson, Associate Professor of Educational Administration, Indiana University

Pupil Transportation — Lloyd Frohreich, Assistant Professor of Educational Administration, University of Wisconsin, Madison

School Food Service — William Castine, Assistant Professor Florida A & M University

School District Productivity — Scott Rose, Budget Director, Pinellas County, Florida

A additional component, "Summary and Recommendations", was prepared by the NEFP Central Staff. In addition to R. L. Johns who coordinated the entire study, Robert Isaac of the Alaska Department of Education and Philip Kelly of the South Carolina Department of Education, participants in the NEFP prototype training program at the University of Florida, were also assigned from the NEFP Central Staff to assist in this study.

The on-site coordinator for the Delaware Department of Public Instruction was John Ryan, Assistant Commisisoner of Education for Delaware.

The work of the school finance specialists was coordinated by the NEFP Central Staff which in turn worked closely with the office of the Commissioner of Education in Delaware. The original design of the study was developed cooperatively with the Delaware Department of Public Instruction. Formal presentations of the study design and an interim report were made to the chief school officers from each of the Delaware local school districts. Upon completion of the final report

a summary of findings and recommendations was presented to the chief school officers and to the Citizens' Advisory Committee which had provided the original impetus for the study.

Members of the NEFP Central Staff began negotiating with researchers for the components during the month of June. By the end of July, all contracts had been consummated for the components of the study, and several of the researchers had already made field visits to collect data. Copies of the basic study design for each component were forwarded to the NEFP and the Delaware Department of Public Instruction for reactions and suggestions. Only minor modifications were made in the initial research designs submitted from the individual study directors.

An interim report was made to the Commissioner of Education, his staff, and the local school superintendents on November 9, 1972. The majority of the component studies had been completed at that time, and an overview of the findings and recommendations of each component was presented. The "Summary and Recommendations" section had not been completed at that time, but NEFP Central Staff members did make some preliminary comments concerning possible recommendations to secure reactions from those in attendance.

On February 1, 1973, the summaries of the component studies and final recommendations were presented to the Commissioner of Education and the superintendents from each of the local school districts in the state. In mid-December copies of the "Summary and Recommendations" had been forwarded to each local superintendent so that he could be familiar with the document prior to the meeting. In the afternoon of the same day,

a formal presentation was also made to the Citizens' Advisory Committee. The press was present for the meetings and received copies of the "Summary and Recommendations."

Constraints. The entire study was scheduled to be completed within a period of approximately six months; this time schedule seems to have been somewhat restrictive in view of the magnitude of the total research effort. Time limitations were one of the reasons for using the "team effort" in the basic research activities The use of multiple specialists with central coordination appears to have worked rather satisfactorily in the Delaware study. In the first drafts of some of the studies, data were duplicated in a few studies. The task of editing the studies to eliminate the duplication was accomplished with a minimum of difficulty. An outside observer might have concern relative to the possibility of conflicting recommendations from different researchers who were investigating related areas; this was not reported to have been a problem by the coordinator of the study and no evidence of this potential problem was found in the final report.

Even though the total budget for all of the technical components may have been somewhat less than the contract amount for a single study in similar efforts in other instances, the relative quality of the individual studies was deemed satisfactory by the NEFP Central Staff and the interested parties in Delaware. Of course, the point must be emphasized that these were status studies and not intended to be longitudinal or depth research studies involving the use of highly sophisticated statistical techniques. The single exception was the productivity study

which did require extensive statistical analysis of the data.

The individual contracts for components of the study ranged from $900 for the school food service study to $3,400 for the educational need, target populations, and cost differentials study. The staffing patterns, capital outlay, and state and local taxation studies were conducted for approximately $2,000. The amount of the contract for the cost of delivering education component was $3,000. Contract amounts for the transportation and school district productivity studies were $1,500. No travel allowance was provided for the food services component, and one trip was permitted for all other components except cost of delivering education and educational need and cost differentials. With the former, the researcher was permitted two trips, and the latter was reimbursed for three trips.

Total budgeted funds for the component research studies amounted to $18,000, which included $16,200 for consultant fees plus approximately $1,800 for travel. These funds did not include NEFP support for the study, nor did they include the mantime and resources contributed by the Department of Public Instruction and local school districts. These latter agencies made extensive contributions to the study as they provided data for various portions of the study.

The NEFP's contribution has been estimated as follows:

State Coordinators (NEFP Fellows)	$ 8,000
Travel for NEFP Staff	3,000
Secretarial Services	2,000
Computer Services	1,000

Allocated time for NEFP Central Staff	$ 9,000
TOTAL	$23,000

To expand the capabilities of the Department of Public Instruction, an additional contract was entered into with Dr. Gerald Boardman to assist Department personnel in the installation and adaptation of the NEFP Computer Simulation Program. The amount of this contract was approximately $2,000. This portion was conducted independent of the NEFP Central Staff; Dr. Boardman was formerly associated with the NEFP while a faculty member at the University of Florida. Current reports indicate that the NEFP Simulation Program has been adapted and is functioning satisfactorily.

Dissemination of the Report. The Commissioner of Education was provided with original copy of the complete report including each of the technical studies. The "Summary of Findings and Recommendations," consisting of 69 pages, was reproduced by the State Board of Education and distributed to each of the chief school officers from the individual school districts, the Citizens' Advisory Committee, representatives of the media, and other interested persons selected by the Commissioner of Education. The total distribution of the Summary was in excess of 150 copies. (Copies of the complete 316 page report were not reproduced in quantity.)

SCOPE OF THE STUDY

The basic research design for Financing the Public Schools of Delaware included technical sub-studies of the principal factors which should be investigated to determine the status of a state's school support program. Virtually all areas of importance were included except school district organization. Even though this area was investigated in two of the other NEFP Cooperating States (Kentucky and South Dakota), it was omitted in Delaware after consultation with the Commissioner of Education. The fact that Delaware had only 26 districts was a major factor in this decision. In the previous section the various technical studies and chief researcher for each area were listed.

In the following discussion the basic rationale, research techniques, and major findings and recommendations or conclusions are presented for each technical sub-study. In the critique following the summarization of each study, attention is given to the adequacy of the overall research design, data requirements, and contribution of findings and recommendations to the total study, and also to the general field of research in public school finance.

Programmatic Cost Differentials

Spending levels of local school districts typically have been compared on the basis of per pupil expenditure. Educators have long been aware, however, that some educational programs are more costly than others. Despite the obvious differences in expenditure per pupil in

various educational programs, only recently have studies been made to identify the magnitude and nature of the differences in the cost of educational programs within individual school districts which are tailored to meet the needs of specific types of pupils. The pioneering research of the NEFP has focused attention upon the cost variations which are inherent in the educational programs offered by local school districts.

Purpose of the Sub-Study. As a significant facet of the NEFP research activities in Delaware, the primary purpose of this study was to gather and summarize information concerning the relative cost of educational programs designed for specific target groups of pupils in the public schools of Delaware. Data for this study included the distribution of pupils in various special educational programs, the number of pupils qualified for, but not enrolled in, special educational programs, and the distribution of pupils in the regular educational program.

Procedures. To initiate the study, a meeting was held in August, 1972, with members of the staff of the Delaware Department of Public Instruction to discuss the data needed for development of programmatic cost indices and to determine the availability of such data.
After discussion the decision was made to include all of Delaware's 26 school districts in the study. The applicable data regularly collected by the Department of Public Instruction included:

1. September 1970 enrollment in day school programs during the regular school year for each major category and sub-category of program by school

2. The number of teachers and non-teaching academic supportive staff members for each district by school
3. The 1970-71 current operating expenses by category of expenditure for each school district.

The September enrollments were assumed to represent full-time equivalent pupils with the exception of kindergarten enrollments and those for vocational-technical students in school districts in Kent and Sussex counties (only three counties exist in Delaware), where full-time equivalent enrollment was assumed to be one half of the reported enrollment.

Since current operating expense data were not available by category or sub-category of program, it was necessary to devise methods for allocating current operating expenses to program levels. The first allocation distributed total current operating expenses to the elementary (K-6) and secondary (7-12) levels by computing the ratio of elementary to secondary teaching and non-teaching academic staff; this was then used to allocate instructional costs. All other categories of expenditure--including district administration, attendance and health services, transportation, operation of plant, maintenance of plant, fixed charges, and food services--were applied equally to each student regardless of level. This allocation resulted in an estimate of the cost per full-time equivalent student at both the elementary and secondary levels in each school district. A second allocation was necessary to distribute the current operating expenses to each of the handicapped programs and to the regular program within the elementary and secondary grade levels.

The number of pupils participating in a special program at the respective grade level was used as the basis for allocating instructional expenses exclusive of those attributable to non-teaching academic supportive staff. These expenses were assumed to apply equally to all students regardless of program within grade level. The aggregation of the allocated instructional expenses associated with the teaching staff, the residual instructional expenses associated with the non-teaching academic supportive staff, and the base expenses exclusive of instructional expenses provided an estimate of the cost per full-time equivalent student for each of the handicapped programs and for the regular program in both the elementary and secondary grade levels. The cost index and the cost differential between the regular program cost per student and the special program cost per student were then calculated.

The researcher noted the following caveats with regard to the method of allocation used in arriving at the cost differentials and cost indices. First, funds were allocated on the basis of the number of academic staff members rather than the current expenses for academic staff. Although salary data were made available for the 1970-71 academic year, these data could not be reconciled with the report of current operating expenses for that year. Furthermore, the expenses involved in the allocation process included expenses not directly associated with salaries, e.g., textbooks, library books, teaching supplies, contractual services, and other expenses; these expenses, by necessity, were distributed somewhat arbitrarily through the use of salaries as

the basis for allocation. This method assumes that all members of the teaching staff, whether in regular or special education programs, receive the same salary; thus it is likely to understate the cost differentials to a slight extent.

The second caveat was that the allocation process assumes that many of the expenses, e.g., transportation, food service, maintenance of plant, etc., would apply equally to students in both regular and special programs. In the absence of more detailed accounting records, no other alternative was available, and the researcher suggested that this approach probably serves to understate the cost differentials. Finally, the allocation process resulted in an estimate of the cost per student by category and sub-category program and may not have represented an accurate accounting of the actual cost per student which would be available from detailed program-by-program accounting records.

Identification of Programs. The various programs provided by each school district in Delaware were identified. The researchers did not make judgments concerning the relative quality of the various programs. The only measure of program output used in this study was the number of students actually involved in each program. The assumption cannot be made that program quality is equal in each district, and local districts can be expected to vary considerably in their expenditures per student.

At the elementary school level the most prevalent handicapped programs were those for educable mentally retarded students, students with learning disabilities, and students with social or emotional

maladjustments. In the secondary schools the most prevalent handicapped programs were for the educable mentally retarded, socially and emotionally maladjusted, and those with learning disabilities. Compensatory education in speech and hearing, homebound and supportive instruction, and ESEA Title I programs was provided in more than 20 of the 26 school districts. In addition, 11 school districts provided a regular program for students who were enrolled in a vocational-technical program in either the Kent County or Sussex County vocational-technical districts.

Findings and Conclusions. Table 1 contains the average cost indices for educational programs provided in Delaware's public schools during the 1970-71 school year. No cost indices were reported for either compensatory or homebound/hospital programs, since the data needed to complete these indices were not available. All cost indices for special elementary school programs were computed relative to their level of expenditure for the regular elementary school program, and all cost indices for special secondary school programs were computed relative to the cost of the regular secondary school program. Programs for deaf or partially deaf pupils were the most costly. Programs for pupils with learning disabilities and for blind or partially sighted pupils also were among the costly. Programs for mentally retarded or orthopedically handicapped pupils were among the least costly.

The researcher cautioned that considerable misunderstanding existed with regard to the application of cost indices in planning for the financing of educational programs. These indices are most appropriately

TABLE 1

A Summary of Average Educational Program
Cost Indices in Delaware Public Schools, 1970-71

Programs	Elementary	Secondary*
Regular Programs	1.00	1.00**
Handicapped Programs		
Educable Mentally Retarded	1.49	1.35
Trainable Mentally Retarded	1.67	1.24
Orthopedically Handicapped	1.76	1.29
Blind or Partially Sighted	1.83	2.48
Deaf or Partially Deaf	3.03	3.05
Socially & Emotionally Maladjusted	1.92	1.95
Learning Disabilities	2.29	2.24
All Programs for the Handicapped	1.71	1.51
Vocational-Technical Programs	--	1.60

*All secondary cost indices are relative to the cost of the regular secondary school program.

**The secondary regular program cost is 1.11 times the elementary regular program cost.

used for statewide planning purposes. The availability of accurate indices from the entire state should permit more accurate estimates of the amount of revenue needed to provide adequately for the unique educational needs of all pupils. In discussing limitations of cost

differentials, the researcher emphasized that cost indices are averages, and approximately one-half of all school districts in the state will be spending more than the state-wide average and the remaining one-half will be spending less. Using the average cost index as a basis for allocating funds will not necessarily provide an adequate level of funds to support the specific educational programs sought by each pupil in all districts.

A second limitation of cost indices, and especially the indices developed in this study, is that they may not show differentiation between various types of delivery systems. For example, if a district is using a type of delivery system which requires increased numbers of supportive personnel, this difference is not recognized in the cost differentials. The magnitude of the differentials in educational costs is closely linked to the type of delivery system used in providing a program--for example,a residential school, a special classroom, or a regular classroom in combination with a resource room. Data indicated that large differences existed among districts in the cost of providing a special educational program for pupils with a specific handicapping condition. Unfortunately, the data did not enable the researcher to identify specific sources of the variations or the type of program delivery system being used in each district, except in those instances where special schools were in operation.

Possibly the most disturbing limitation of cost indices is that they reflect current educational practices rather than desired educational practices. Cost indices in no way reflect the efficacy or efficiency

of the educational programs upon which they are based. They typically reflect what is currently being done rather than what could be or should be done.

A fourth limitation is that cost indices show the relative cost of educating pupils in special programs compared with the cost of educating pupils in regular programs. They provide no information on the relative educational wisdom or efficiency of the manner in which the funds are being expended for either regular or special programs. In view of the variations in the nature of educational programs among districts, a well-developed, carefully monitored evaluation of all educational programs based upon the desired outcome must be conducted if cost indices are to be interpreted properly.

Last, costs will differ among districts for identical programs. For example, one district may be transporting more pupils involved in special programs than another district. The pupil-teacher ratio is also a very important factor in determining the relative cost of a specific program. One district may have too few pupils to operate a program at maximum efficiency, and another may have its classrooms overcrowded.

Cost differentials essentially provide state fiscal policy-makers with a valuable planning tool, but they do have their limitations. More detailed information is needed concerning program inputs and their relation to program effectiveness and efficiency so that planning decisions may be as rational as possible.

Critique. This technical component is one of a series of cost differential studies being conducted in different states. Basic research procedures of this study are essentially the same as for those conducted in the other NEFP Cooperating States. As in the other instances, the data were not readily available in usable form because local districts were not using program accounting formats in their business procedures. Much of the needed information was available from the Department of Public Instruction, but some data had to be secured directly from local school districts. The researchers had considerable difficulty in their efforts to reconcile state and local records. Problems associated with securing reliable data possibly contributed to the researcher's statements of caution relating to the use of programmatic cost differentials in computing local school district allocations under state school support programs.

The basic findings of this technical study should make a valuable contribution to the field of research relating to programmatic cost differentials. For future planning in Delaware, the cost indices and estimates of unmet needs should be of considerable value. The question of whether or not Delaware will incorporate these findings into a revised state support program is unresolved at this time.

State and Local Taxation and School Revenues

The revenue dimension of a theoretically sound state school support program is just as critical as the educational program or allocation dimensions. Consideration must be given to this dimension to preclude

the possibility of severe imbalances as program modifications and additional support areas are proposed for school support. No state has unlimited revenue sources, but virtually every state has additional revenue available. The critical question is the degree to which a state will enact a balanced revenue program and also the degree to which available revenue for public elementary and secondary pupils will be equalized through the program. The purpose of this technical sub-study was not to recommend a tax program, either revisions or new sources, but to present and analyze status information needed to reformulate the state school support program.

Study Format. This technical study consisted of eight sections:

1. Revenue of state and local governments
2. Recommended principles of taxation
3. Cooperative analysis of the actual and recommended taxation practices showing alternative sources of revenue available for support of education
4. Fiscal capacity of the state
5. Conclusions regarding taxation
6. Variations between school district revenue and financial ability
7. The level of equalization of fiscal resources between districts
8. Conclusions about the present distribution formula

State and Local Revenue. All or nearly all known types of taxes except the general sales tax were utilized in Delaware by one or more levels of government. Tables 2, 3, and 4 illustrate the type and uses of each tax.

TABLE 2

TYPES OF TAXES AND JURISDISTIONS APPLYING THEM TO INDIVIDUALS

	State	County	School Districts	Municipalities
Income				
1. Personal Income	X			
2. Wilmington Earned Income				X
3. Capitation		X	X	
Consumption				
4. Alcoholic	X			
5. Cigarette and Tobacco Products	X			
6. Pari-Mutuel	X			
7. Motor Fund	X			
8. Public Utilities	X			
9. Public Accommodations	X			
Wealth				
10. Real Property		X	X	X
11. Inheritance	X			
12. Gift	X			
13. Estate	X			
14. Realty Transfer	X			X

Source: Division of Urban Affairs, University of Delaware, "A Survey of Revenues of State and Local Government in the State of Delaware" (Newark, Delaware, 1972.)

TABLE 3

TYPES OF TAXES AND JURISDICTIONS APPLYING THEM TO BUSINESSES

	State	County	School Districts	Municipalities
Income				
1. Corporate Income	X			
(Merchants' License Tax)				
2. Retailers	X			
3. Contractors	X			
4. Manufacturers	X			
5. Wholesalers	X			
6. Food Processors	X			
7. Restaurant Retailers	X			
8. Farm Machinery Retailers	X			
9. Grain Food Dealers	X			
(Utilities)				
10. Steam, gas, and Electric	X			
11. Express	X			
(Insurance Tax)				
12. Wet Marine and Transportation	X			
13. Workmen's Compensation	X			
14. Fire Insurance	X			
15. Others	X			
16. (Lease Use Tax)	X			
17. (Wilmington Gross Receipts)				X
Consumption				
18. Motor Fuel	X			
19. Public Utilities	X			
20. Public Accommodations	X			
21. Motor Carrier Road Tax	X			

TABLE 3 (continued)

	State	County	School Districts	Municipalities
22. Unemployment Compensation	X			
23. Wilmington Employee Head Count				X
Wealth				
24. Real Property		X	X	X
25. Realty Transfer	X			X
26. Franchise	X			
27. Banks and Trusts	X			
28. Telephone and Telegraph	X			
Miscellaneous Sources				
29. Licenses	X			
30. Fees	X			
31. Permits	X			
32. Fines	X			
33. Rentals	X			
34. Sales	X			
35. Interest	X			
36. Grants & Donations	X			

In addition to the thirty-six taxes listed above, the state receives non-tax revenue from the four sources shown in Table 4.

TABLE 4

TYPES OF NON-TAX REVENUE RECEIVED BY LEVELS OF GOVERNMENT

	State	County	School Districts	Municipalities
Transfers	X	X	X	X
Earnings on Assets	X	X	X	X
Sales of Goods & Services	X	X	X	X
Control	X	X		X

No state taxes were earmarked for education; therefore, all state support for education must come from the state general fund. Longitudinal projections of available revenue for education are not feasible, for the percentage of the state general fund available for education is determined solely by the legislative priority placed on it in comparison with all other state functions.

Real Property Tax. The real property tax produces nearly all the local revenue available to schools. Only two other types of taxes are currently levied for local revenue. The capitation tax is applied in twelve of the twenty-three school districts and the earned income tax is applied in Wilmington. The objectionable features of the property tax are so serious that it is difficult to defend a heavier reliance on this tax to support education, but the property tax has many redeeming features for use with other local purposes. Since education is a state responsibility, heavy reliance upon the property tax fails to equalize educational opportunities or equalize the tax burden. In Delaware, this point was dramatically illustrated: one district had a full value of real estate per pupil of $52,023.00, and another district in the same county with a full value of real estate per pupil of $14,729.00.

Delaware has historically provided a relatively larger share of school revenue from the state treasury than most states have, and it has not utilized the property tax as a source of state revenue. Therefore, the property tax is used less in Delaware than in any other state when

the revenue generated from it is measured against each $1,000 of personal income in the state.

Sales Tax. Delaware was one of only five states that did not make use of the general retail sales tax as a major source of revenue. Various evaluation criteria were applied to the sales tax, pointing out that it is more equitable than the property tax but is somewhat regressive upon persons in the lower income groups. The problem of economic distortions was not considered to be critical because the states adjacent to Delaware collected a sales tax. Collection of the tax at the state level was deemed to be relatively efficient.

Excise Taxes. Six excise taxes were being collected in Delaware, three of which were closely related to personal consumption taxes: alcoholic beverages tax, cigarette and tobacco products tax, and pari-mutuel tax. The other three were levied on individuals and businesses -- motor fuel tax, public utilities tax, and public accommodations tax. These taxes may be justified as controls on the use of a commodity or as compensation for social costs for which use of the products may be responsible, but they are not suitable for financing education. The researcher pointed out that they may be used because of the relatively high productivity, general acceptance, and minimal damage to economic development; however, excise taxes are considered highly regressive.

Fiscal Capacity. In this portion of the study, attention was given to the following measures of fiscal capacity: 1971 per capita personal income, per household effective buying income, per capita effective

buying income, per capita retail sales, per household retail sales, per capita real value of property, and per pupil real value of property. Delaware ranked relatively high on four of the five indicators of fiscal capacity for which data were available. The effect of Delaware's relatively high income is evident, as it ranked eleventh nationally in per capita total tax collections in 1970 but only twenty-ninth in state and local tax collections as a percentage of personal income.

Delaware was in the fortunate position of having additional state revenue capacity, for the state did not levy a general sales tax. The state ranks fifth among all states in the relative productivity of its state taxes. The levy of a state general sales tax would reduce somewhat the progressivity of Delaware's state tax structure; however, if food and medicine were exempted and adjustments made for persons with low income, the sales tax would not be unduly regressive.

Variations Between Revenue and Ability. The combined basic and special state funds were having some equalization effect. A ratio of 7.54 to 1 existed between the amount of local revenue available in the district with the greatest amount of local revenue and the amount of revenue available in the district with the least amount being provided per pupil. The ratio between the ability of the most wealthy district and that of the least wealthy district was 3.95 to 1. The ratio of revenue was 1.83 to 1. Research techniques indicated that local revenue was having a disequalizing effect and that federal revenues did not seem either to equalize or disequalize.

Levels of Equalization. An analysis of the Delaware state school support program indicated that the state ranked ninth among the states in level of equalization incorporated into its state school support program. This relatively high ranking was caused by the proportionately high percentage of school revenue being provided from state sources.

Conclusions. The researcher concluded that the Delaware state plan for education had many desirable characteristics. First, a relatively high percentage of non-federal revenue was provided by the state. The effect of this was that a higher degree of equalization may be achieved than would be possible if greater reliance were placed on local funds derived from the property tax base.

The amount of state aid received by localities was based upon the number of pupil units of need which recognize necessary variations in the per pupil cost of different types of educational programs. Through this technique, proportionately more funds are provided to districts with the greatest amount of need. The problem was that local district supplements to the state funds did not adequately take into consideration differences among the districts in the full valuation of property per pupil. This, in essence, resulted in the quality of a child's education in Delaware being dependent to some extent upon the wealth of the school district in which he resided.

Critique. This technical component was a rather traditional analysis of ability and effort among school districts within a state as well as the relative ability and effort of the state. Little was found in the overall research design which would be of significant value

to others conducting a similar study.

Members of the central staff indicated that there was some overlap in the data gathered for this component and the data required by the central staff for the consideration of alternatives. (The problem may have been more related to a lack of coordination than to duplicated data gathering efforts, for the technical components were completed prior to the work of the central staff and technical study data could have been used by the central staff in the analysis of alternatives.)

Contributions of these components to the field of research in school finance are very limited. The relevance to the study of Delaware's state school support program can be summarized in two statements: (1) Additional revenue from state sources can be secured, and (2) Even with the relatively high level of state support in Delaware, the variations in ability and effort result in considerable disequalization in the amount of dollars available for children in different school districts.

Cost of Delivering Education

Virtually no state school support programs attempt to recognize the differences in the unit costs among districts seeking to provide the equivalent level of educational services. Variations are found in the amount of dollars expended for equivalent services among school districts; the question is whether or not these factors are beyond the control of the district and should be recognized in the allocation of state funds.

Research Design. Because Delaware is a small state with few school districts, this study involved all school districts in the state. Attempts were made to present data for all districts whenever possible. However, comparisons were made between individual school districts when data were available only for these districts. In other instances comparisons were made between counties because of the lack of data.

Adequate measures were not available to reflect living cost differentials for school employees living in different communities. The present consumer price index was inadequate because of the introduction of new products and services which have reshaped buying habits. Population shifts--both as to age and location--have affected the nature of consumer needs and satisfactions. The attempt in this study was to identify the factors that caused variations among the districts in the cost of producing education.

Findings and Conclusions. Available data would not permit the development of an index related to the cost of delivering educational services. Among the districts, variations were found in per pupil expenditures for various budgetary functions, but these variations appeared to be principally related to variations among the districts in per pupil wealth and to variations in the local tax effort in proportion to ability. When all current expenditures per pupil were correlated with wealth, the wealthy districts were found to be paying higher teacher salaries and to be spending more per pupil on other functions of expenditure than the less wealthy districts.

Another concern is related to the amount of money required to maintain an equivalent standard of living throughout a state and the availability of goods and services among districts within a state. No evidence was found that the cost of living for the same standard of living varied substantially among the districts of Delaware.

Through its policies, Delaware was currently recognizing variations in the unit cost of delivering educational services in an indirect fashion. The Delaware state salary schedule has recognized the differences in training and experience for teachers, but has been so low that local boards supplemented the schedule in order to pay competitive salaries. Through this action,low per pupil wealth districts have been at a decided disadvantage.

Critique. With the great concern for equalization of funds among school districts and the concurrent need to assure that achievement of complete equalization will not result in hardships on local school districts, the need for adequate data relating to the variations in costs of delivering equivalent educational programs and services has been widely recognized by researchers and also by the President's Commission on School Finance. The problem, as indicated again in this study, is that the data required for a study of this magnitude are simply unavailable at the present time.

In this particular instance the initial study design may have been somewhat faulty because it was somewhat piecemeal rather than an integrated unit. Even though the results of this study have been of questionable value, more complex efforts in other states have also failed

to yield findings and conclusions which will be of value in the restructuring of state school support programs. The lack of comparable data on a district-by-district basis constitutes one dimension of the problem; the other dimension is related to the availability of an equivalent standard of living in all districts in the state. This latter issue was not addressed in the study. Possibly, the major contribution of this study was to demonstrate the complexity of the data gathering and research process in this area and to point out that productive efforts in this area will require high levels of funding.

The need for adjustments in the state school support program related to the cost of delivering education may not be as severe in Delaware as in other states. Variations in the cost of delivering services and programs are recognized in the areas of school construction, plant maintenance, and transportation.

Status of Delaware Public School Personnel

The vital role of personnel, primarily teachers, in schools must be considered in any comprehensive study of the state school support program. Various incentives to alter school board-administrator-teacher behavior may be incorporated into the state school support program to expedite the achievement of desired policies. However, before suggesting drastic changes, certain base-line status information must be available for planning purposes. The major purpose of this study was to provide the basic information needed to consider the feasible alternatives.

Research Process. In this technical study an analysis was provided of the facts, observations, and insights concerning the compensation being provided Delaware public school personnel. This study focused on the following questions:

1. What are the salient characteristics of public education in Delaware?
2. What trends are developing in the composition of Delaware public school personnel? in the economic status? in the supply and demand for school personnel? in the preparation and certification of public school personnel?
3. What are the key problems and opportunities for positive developments in the teaching profession in Delaware?

Findings and Conclusions. Attention was given to the current status of public school personnel, unresolved problems relating to their economic welfare, and other factors contributing to the social and economic conditions and changes in Delaware public education.

Between 1966-67 and 1970-71, the number of pupils increased approximately 20 percent, and the instructional personnel increased approximately 29 percent. During the same period administrative personnel increased by 80 percent; however, the number of administrative units was reduced by slightly over 50 percent during the same period with the number declining from 50 units in 1966 to 26 units in 1971.

Between 1966-67 and 1970-71, salaries for instructional personnel increased by 68 percent and for administrative personnel by 128 percent.

During the past decade the educational picture has changed rather dramatically in Delaware. Delaware was among the lowest ranking states in terms of pupil enrollment (the percentage of public school enrollment in the school age population), but the state moved from a ranking of forty-sixth among the states in 1961 to eighteenth in 1971. The average salary for Delaware public school teachers decreased from eighth in 1961 to twelfth in 1971. The state has dropped from first to third in the percent of public school revenue derived from the state government and from first to tenth in per capita personal income. It has risen from forty-eighth to forty-fifth in public school revenues derived from local government and dropped from first to fourth in per capita state expenditures for all education. The ranking of Delaware on current expenditures per pupil over the past decade has remained essentially the same, even though the per pupil expenditure has more than doubled. During approximately the same period of time the number of classroom personnel has increased by 71.8 percent.

When compared with its three neighboring states, Pennsylvania, Maryland, and New Jersey, as well as with the national average, Delaware ranked lower than two of its three neighbors in average salaries paid to all teachers. Delaware ranked lowest among the four states in the percent of increase in instructional staff personnel and in this area was behind the nation as a whole. In 1971-72 Delaware ranked below its neighboring states in percent increase in per capita personal income,

personal income per pupil, per capita disposable personal income as a percent of total personal per capita income, and percent in current expenditures per pupil. This discussion indicates that Delaware's competitive posi ion has declined within the last decade.

In comparing the beginning and average salaries paid in the ten lowest and ten smallest districts in Delaware, the data indicated a difference of $743.00 between the average salaries in the two groups of districts, and a difference of $1,171.00 between the average starting salaries in the two groups of districts.

An analysis of the sources of Delaware public school personnel indicated that over 75 percent had been prepared in institutions outside of Delaware. A study of the graduates of Delaware higher education institutions with preparation in education indicated that the number had increased from 296 to 500 between 1966 and 1971, but the percentage of graduates not teaching had risen from 39 to 40 percent during the same period. Delaware's higher education institutions in 1970 graduated 500 bachelor degree candidates in education, and the number of vacancies in public education in June 1972 was 534. These data would suggest that these institutions were preparing a sufficient number to fill existing vacancies. Some progress had been made in retention of Delaware graduates in Delaware schools: 57 percent had been retained in 1966 and 65 percent in 1970. Over the same period New Jersey had employed the highest percentage of educational personnel who were leaving Delaware and the percentage had increased during that

three-year period.

The relatively moderate decline of Delaware's position among the 50 states over the past decade in the area of public education develops into a consistent pattern when examined in terms of a variety of variables. The state has dropped from first to third in percent of public revenue derived from state government, from first to tenth in per capita personal income, risen from forty-eighth to forty-fifth in rank in public school revenues derived from local government, and dropped from first to fourth in per capita state expenditures for all education.

The declining position may not appear alarming, but if the overall trend continues in this decade, Delaware will be in a relatively weak position to compete for competent personnel. The problem was further accentuated when salaries for classroom teachers were compared with similar positions in private industry; the salaries were simply not competitive. Even though the supply and demand for teachers is now relatively balanced and there are indications that the supply may be exceeding the demand, some subject areas are still in short supply. The emerging pattern of supply and demand for educational personnel will enable districts to become highly selective in the employment of personnel.

Critique. The basic research design of this technical component must be described as comprehensive and exhaustive. Data requirements were evidently easily met from state and federal sources.

Nationally, the contributions of this component's findings to the area of research in school finance will be possibly somewhat limited.

Within the state, the relevance of the study should have considerable value. The findings indicate Delaware's competitive position among its neighboring states is declining. Attention is focused on the need to ascertain if local school districts can attract and retain quality staff members who are receiving sufficient salary to maintain an adequate standard of living. No attempt was made to answer this latter question.

Financing School Construction in Delaware

Delaware has a long and distinguished history of state concern for the school facility needs of local school districts. A program of state grants for capital outlay was adopted in 1919. Delaware was the first state to adopt and fund a significant portion of local school district construction projects from state sources; during the period between 1919 and 1940, state support for local school construction averaged 60 percent.

The nature of the program has varied over the years, ranging from state assumption of building costs to partial assumption of local debt service and further to state grants for 60 percent of approved project costs for school construction in 1968-69.

Among the innovations which should be credited to Delaware in the development of the theory of state and local participation in the financing of public school facilities are:

1. Required state approval of projects
2. Use of state bonds as a source of funds
3. Elegibility for all districts

4. Inclusion of vocational schools and other special facilities
5. State Department of Public Instruction studies of school facility needs
6. Development of objective formulas for determining state and local shares of project cost
7. Continuity for more than 50 years of stable and significant policies for a program of state grants for school facilities.

The Existing Program. Currently the state assumes 60 percent of the approved project costs of most public elementary and secondary school construction. Vocational education facilities and all special education facilities (except those for the educable mentally handicapped) are paid entirely from state funds. Classrooms for EMR pupils are included in the regular program. The existing Delaware program for financing school construction is generally regarded as among the best in the United States.

The state education agency in Delaware is staffed with school planning experts and provides local districts with extensive services, more than found in most states. The range of the program includes determination of needs, preparation of educational specifications, and evaluation of drawings and specifications upon request from local school districts.

Each local school district develops a six year Major Capital Improvement request which is submitted to the Department of Public Instruction (DPI). This proposal is evaluated by the school planning

staff of the DPI and then transmitted to the State Board of Education for approval in the form of a Certificate of Necessity.

These documents are then submitted to the Office of State Planning which reviews and submits them to the Office of the Governor. At this point the local district may receive approval to proceed with construction of facilities. The state has determined an allowable project cost of $46.00 per square foot which includes site, construction, equipment costs, and all fees. The local share of project cost is obtained by issuance of local district bonds which are sold to the state of Delaware at a private sale.

The exception to this process is the Wilmington School District which is fiscally dependent upon the civil government of the city of Wilmington. Consequently, procedures for this district differ particularly with regard to the raising of local funds, bond sales, and procedural items.

Delaware's school housing problem is not as severe as found in other states, for in 1971-72 less than 25 percent of Delaware pupils were housed in buildings occupied prior to 1950. Many of the older buildings are still quite usable for today's educational program.

Program for Major Capital Improvement. The current problem in Delaware is not to provide funds for new facilities, but for upgrading and replacing older school buildings. Construction formulas are used to determine space allowances for new construction, and these are reasonably adequate. The formula approach, however, cannot work well for renovation of existing school facilities or for conversion of

"found space" to educational purposes. Each of these projects is somewhat unique and each decision has to be made on its own merits.

Conclusions. The researcher presented the following conclusions for consideration in revising Delaware's school support program:

1. The Delaware program for financing school facilities and for maintaining and upgrading existing plants appears to be accommodating the continuing need of local school districts.
2. The typical Delaware school district has sufficient debt leeway to permit construction of needed school buildings, but leeway is not uniform and relatively poor districts faced with a great need for buildings may be unable to raise the required local share.
3. Projections of future enrollments indicate that the state, as a whole, will not need to contend with enrollment gains in the next few years and thus the need for new facilities will not be great. A few districts, however, will continue to need new plants to accommodate enrollment increases. Delaware's fiscal condition is such that the state should be in an excellent position to finance any needed upgrading of existing school facilities during the remainder of this decade, and if the state properly marshalls its resources, replacement or rehabilitation of all obsolete facilities can be accomplished.

4. Certain actions can be taken to enable Delaware to achieve more economic and efficient use of its school building dollars. Lump sum appropriations, removal of barriers to competition, and heavier reliance upon DPI school facilities specialists should be explored.

Critique. Delaware's pattern of providing capital outlay support and the availability of quality data from the Department of Public Instruction contributed to this being one of the better technical components in the report. Adequate and reliable data were available for all of the major items of concern.

The major relevance of this technical study will be in the discussion of existing programs and recommendations for improvement. These items will be of interest to researchers nationally as well as to educational administrators and policy makers within the state of Delaware.

Pupil Transportation

The research objective in this technical component was to determine changes and improvements which should be made in the pupil transportation program. Attention was given to the present state allocation program, the degree to which the program was serving clientele needs, and the overall program structure. The report contained the following subsections:

1. Historical background
2. Recent studies of Delaware's pupil transportation program
3. Magnitude of the program
4. Pupil transportation projections

5. Pupil transportation costs

6. Description of the program

7. Program and cost comparisons

8. Findings, conclusions, and recommendations.

Historical Background. Since 1921, when pupil transportation rules and regulations were established, Delaware has recognized that the state has responsibility for overseeing transportation programs. A 1926 report of the Delaware Department of Public Instruction indicated that Delaware was the only state in which the cost of transporting pupils was paid entirely from state funds. During the intervening years the state's financial support for the pupil transportation program has continued at a high level. The state presently supports 100 percent of the approved formula cost of transporting children.

Recent Studies. In 1966 and 1972 two studies were made of Delaware's pupil transportation program. Recommendations of the 1966 study calling for establishment of locally supervised districts, state regulations and assistance, coordinated purchasing of school buses, and investigation of computer routing and scheduling were implemented; however, recommendations pertaining to public ownership of all school buses, state support of a standard program, and state support for field trips have not been implemented. Some impetus toward greater public ownership was evident in northern Delaware, but the entire state had not seen fit to adopt the policy. Program enrichment costs are still

borne by local school districts except in those instances where public and local school officials have access to public-owned vehicles and the district bears only the cost of the driver and operational costs for enrichment trips.

The purpose of the 1972 study was to test the feasibility of a joint venture or a proportionately greater use of municipal transit vehicles, specifically the Delaware Authority for Regional Transit (DART) which was operating in northern Delaware. The basic conclusion of this study was that operation of school bus routes by DART appeared to be impractical and not economically feasible. Resultant savings would have possibly been overshadowed by other operating problems resulting from the integration of DART services with the present school bus operation.

The researcher in this study questioned the assumption that DART would be unable or unwilling to change its method of operation to transport school children. He pointed out that DART was financially solvent and was not seeking to expand its operation and ridership. Further, he pointed out that one obvious alternative was that DART could serve as a contractor in much the same fashion as the existing private contractors transport school children.

An independent study of the feasibility of using computers for transportation routing concluded that little would be gained since the present system allowed for individualized attention and analysis. The trial use of the computer program arrived at the same array of route patterns as were presently in operation. The current method

reportedly does provide for individualized attention and can uniquely solve many atypical problems for which the computer program is ill equipped. However, in very large operations with an expanding transportation program advantages may accrue through computer routing for the purpose of establishing standard routes and reducing the work load of some of the overburdened regional transportation directors.

Magnitude of the Program. Between 1968 and 1969 the number of public school children transported in Delaware increased from 61,368 to 79,837, an increase of 30.1 percent. The fastest growth of pupils transported occurred in New Castle County, the most populous county in the state. During the same period the number of nonpublic school children transported increased from 4,585 to 9,428, an increase of 106 percent. A sizeable increase in ridership occurred between 1969-70 and 1970-71 because of the incorporation of a policy that transportation of nonpublic school children was a responsibility of the state. Recognition of this responsibility resulted in substantial increases in the dollar reimbursement to public schools, and led to greater claims for reimbursement as well as greater interest in providing transportation for nonpublic school children.

Transported pupils were divided into the following classifications: regular program pupils, special education pupils, and vocational-technical pupils. Special equipment was needed to transport special education pupils, and longer trips and additional routes were required to transport vocational-technical pupils. Between 1968-69 and 1971-72 the transportation of regular pupils increased by 26.6 percent, the

number of special education students declined, and the number of vocational-technical students increased by more than 100 percent.

In the entire state 59.13 percent of the students were being transported in 1971-72 and the number transported among the three counties varied from 86.88 percent in Sussex County to 49.10 percent in New Castle County. Between 1968-69 and 1971-72 the percentage of public school enrollment being transported increased from 49.24 percent to 59.13 percent. The percentage of nonpublic school enrollment being transported for the same period increased from 23.86 percent to 51.04 percent. When compared with the previous year the percentage of enrollment being transported had increased for each of the four years.

The researcher made the assumption that the number of pupils transported would decline over the next four years, presuming no changes in policies relative to distances for which pupils will be transported. The assumption also suggests that enrollments in public and nonpublic schools will decline and that there will be no increase in the percentage of children being transported.

Pupil Transportation Costs. The total state reimbursed transportation costs in each county were presented, but these only included capital and operational expenditures reimbursed by the state. Local costs were not shown; these would have included expenditures incurred in transporting pupils for educational or extra related activities.

When the rate of increase and total cost were compared with the rate of increase of ridership of public school students, the total cost increased at a much faster rate except when the last two years were

compared. The data also indicated a much greater reliance on publicly owned equipment, particularly in New Castle County.

Description of Program. The researcher presented a technical description of the operation of the Delaware program for providing transportation reimbursement to the local school districts. Under the present arrangement equipment may be purchased by the State Board of Education and titled jointly between the state and the local district to which it is assigned; however, the state may reassign a bus when it is no longer needed in a local district.

The program includes fixed charges, allocations for bus storage, drivers' physical examinations, and bus inspections. Operation allowances are provided for a driver's wages, gas, oil, tires, and maintenance, but different formulas are computed if the bus operates north or south of the canal. The capacity of the bus is also a factor in calculating operational allowances; the driver's salary remains constant but the transported pupil allowance for other operational costs decreases as the capacity of the bus is reduced.

An administrative allowance is provided for operation of the transportation program, with smaller buses receiving proportionally less than larger buses. In addition, provisions are made for a layover time when it is less expensive to pay the layover cost than to transport the bus back to its original base.

The wages of attendants are paid for routes on which the buses have a seating capacity of more than 15 pupils and are used to transport handicapped pupils. Insurance for district operated buses is provided

through the state insurance commissioner's office.

For contract operation an allowance is made for depreciation of the vehicles and other costs which the contract operator must pay that are not paid by public agencies. The allowance for fixed charges is greater because of the additional cost incurred by the private owner for the bus license and insurance. Private contractors are allowed an additional allotment to pay for workmen's compensation, unemployment insurance, and social security. The administrative allowance is also greater for contract operations; the allowance is 10 percent of the per diem rate.

The state policy with respect to reimbursing nonpublic schools for transporting their pupils is to allocate a dollar amount per pupil based on the previous year's average cost of transporting a pupil in the public schools. When general public carriers are used to transport qualified students, reimbursement is based on the actual number of bus tickets used for transportation with a maximum allowance of $54.00 per year per student. When transportation is not available, the qualified student may be transported by private auto and reimbursed at the rate of 10¢ per mile, not to exceed $72.00 per pupil per year.

The state also provides for reimbursement to districts which transport pupils who live less than the stipulated mileage from school when unique traffic conditions exist. Delaware has a "Unique Pedestrian Hazards Committee" which passes judgment on special cases for students who contend that extenuating circumstances qualify them for bus transportation. If the committee acts favorably, the school district

must transport the student and in turn will receive reimbursement from the state for the cost. Of the slightly less than 80,000 pupils being transported in the state, 3,000 are being transported under this provision.

The transportation system for the state is operated under the supervision of a District Transportation Supervisor who is assigned on the basis of 7,000 pupils transported; he may serve more than one school district. The salary of the supervisor is paid by the state, but may be supplemented by a local district to any agreed level. The District Transportation Supervisor provides a link between state and local districts, plans routes,arranges for private contracts, maintains transportation records, provides driver orientation courses, and provides other services under the direction of the State Transportation Director. At the time of the report, fourteen District Transportation Supervisors were working in the state.

Bus drivers in the state must take an eight hour driver training course before they can be fully licensed; these courses are offered on a regular schedule under the office of the State Transportation Division of the Department of Public Instruction. For those who attend the eight hour training course reimbursement is provided by the state,

Program and Cost Comparisons. Existing systems for cost accounting and unit cost systems for transportation had certain inadequacies; the basic question is what should be included in the "standard transportation costs." Should this figure include all transportation costs and insurance costs as factors in computing the unit cost determination? Should the total cost include those associated with transportation of

pupils for special programs such as special education, summer school, kindergarten, vocational-technical, and federally supported activities? Cost accounting records are not maintained on a programmatic basis and do not provide data for making comparisons. In the absence of programmatic cost data the researcher was unable to determine the costs of the transportation program which were associated with the various programs in which pupils were participating.

The researcher attempted to compare Delaware's transportation program with programs in nine other states and found that conclusions from the comparisons had to be very general. He was plagued again by the lack of a standardized method of cost accounting. Upon initial examination, Delaware's average per pupil costs appeared to be in excess of those of other states. However, the other average costs were not comparable to Delaware's because most states did not include capital outlay, bus depreciation, administrative costs, or insurance in their cost figures. In the one instance when the state's program appeared to be similar to Delaware's the cost also appeared to be similar.

The basic conclusion drawn from the data was that the cost of school district owned and operated vehicles appeared to be less than the cost of contracted or privately owned vehicles. However, even this statement must be qualified, for many of the standard cost variables did not include purchase costs or depreciation for district owned vehicles.

School districts in heavily populated areas usually incur higher costs because wage scales are higher, fringe benefits are more expensive, capital outlay facilities cost more, and operational problems related to routing, congestion, and hazards also tend to drive per pupil costs

higher than in other areas.

The data in the study illustrate the relationships between average per pupil costs and the density of the transported pupil population in the district. Generally, higher per pupil costs were associated with a lesser number of students per square mile. In districts with unique transportation problems such as high labor costs, more special education students being transported, more special hazard ridership, and more traffic congestion, the cost per pupil appeared to be higher.

Conclusions and Recommendations. A strong advocacy position was expressed for public (state and/or local district) operation of the transportation program. Minor modifications were suggested for revising the transportation distribution formula. Emphasis was placed on the continuing need to revise and update the formula in light of changing conditions.

The present method of allocating District Transportation Supervisors was questioned. Suggestions included changing to a more complex but more equitable and functional allocation system which would be based on the number of buses operating in the district and the number and complexity of the bus routes that must be served.

Detailed recommendations were presented relative to the mileage limitations for reimbursement purposes. The researcher pointed out that this is a matter of state policy, for there is a virtual dearth of research related to the relationship between a child's educational performance or attitudes and the distance he walks to school.

Considerable attention was given to the need for generating cost per pupil data on a programmatic basis, type of child served, and nature of equipment. The researcher also suggested that the state consider generating cost figures on the lineal density per bus mile and further suggested that all transportation costs should be included in unit cost data.

Attention was given to the nature of the present training program and the suggestion was made that a prescribed period of time be identified for the length of the program and the material to be included in the program. It was also suggested that the state should establish additional training sessions for individuals who have continued to be employed as bus drivers for over two years. In view of the changes in laws and policies, the recommendation was that all bus drivers be required to take a four hour refresher course every other year.

The comprehensiveness of the current safety records on pupil transportation was questioned. In addition to the accident reports compiled from police reports completed at the scene of an accident, the district transportation supervisor could be asked to complete additional accident forms. These could provide summary data relating to the safety record of the transportation program on an annual basis.

Critique. The overall research design for this technical component was very adequate; however, the researcher did express some concern related to the need for additional data concerning the per pupil cost of transportation programs.

Information related to the number of pupils being transported and the total cost appeared to be reasonably adequate. The absence of data related to the programmatic costs of the total operation of the transportation program resulted in serious limitations on the study. Funding of the current transportation program for Delaware is highly centralized, and the state provides district transportation supervisors to coordinate the program. Under this arrangement, the absence of more detailed cost accounting information may not be as critical as in a state which operates a more decentralized program with the same level of state support.

Considerable attention was given to the relative efficiency of district owned and operated transportation programs in contrast to private contractors for such programs. This question has been belabored for several years, and data continue to indicate that publicly owned transportation programs are more economical and provide greater flexibility for the transportation program to "serve" the total school program. Resolution of the question may not be determined by economics or efficiency, for it appears to be more closely related to public policy.

The national relevance of this study will be somewhat limited because of the uniqueness of the Delaware situation. Within the state, the research effort should be of considerable value to those interested in effecting administrative improvements in the transportation program.

School Food Service Programs

As one aspect of the overall system of education in Delaware, the school food service programs were studied. Data were collected from the Department of Public Instruction and individual school districts. A questionnaire was used to gather data from individual school districts.

Overview of the Program. Authorization for administration of school food service programs in Delaware is granted by a statute which vests administrative and supervisory authority for all public education programs with the State Board of Education. In Delaware public funds may not be used for grants-in-aid to non-public schools. In the absence of a statute prohibiting such action, the state of Delaware does administer school food service programs in non-public institutions.

State law provides for the payment of salaries to school lunch supervisors and cafeteria managers in local school districts. This practice has resulted in the establishment of qualifications for these positions by the State Board of Education.

Records concerning disbursement of federal and state funds for school food service programs to local districts are kept by the Department of Public Instruction; this agency forwards invoices to the State Treasurer who makes direct payments to local school districts. All claims are consolidated into one check per district per month.

The State Purchasing Agent is responsible for the allocation and distribution of federally donated commodities. This practice is not

necessarily desirable because it results in two state agencies being involved in the distribution of commodities. The researcher indicated that one alternative would be to transfer authority and responsibility for allocation and distribution of commodities to the State Director of School Food Services; another apparent alternative would be to place the allocation function with the Department of Public Instruction and let the distribution function remain with the State Purchasing Agent. This latter approach seems to be analogous with the procedures for reimbursement. The principal point is that the school food service program personnel can be assumed to have training and experience in the utilization of foodstuffs, while purchasing department personnel would not necessarily have this level of expertise.

The relationship of the school food service program to other administrative and supervisory units within the Department of Public Instruction appears to be largely related to the establishment of effective working relationships among those whose programs have some relationship with the food service program, e.g., home economics and health service. The qualifications of school food service supervisors and school lunch managers are set forth in state statutes and are designed to assure the employment of well-qualified persons. In addition to initial qualifications, all school food service personnel participate in in-service education programs designed to upgrade continually their knowledge and skills. The organization of in-service programs appeared to be quite effective and was contributing to the

continued improvement of program personnel. The level of coordination and articulation between the state and local districts appeared to be well planned and to be operating effectively.

Financing the Program. Pupils in public schools have access to five child nutrition programs and those in private schools have access to three such programs. Public school pupils participate in the lunch, breakfast, special milk, non-food assistance, and SFPC (day care) programs, but non-public school pupils do not participate in the non-food assistance and the SFPC (day care) programs. State funds earmarked for administration and supervision are used to support programs in both public and private institutions, but no data were available which indicated the allocation of funds between the two types of institutions. Available data also did not reflect the capital outlay for facilities and equipment or the amount of local funds expended for any phase of the program.

An analysis of the sources of funds for the school lunch program indicated that child payments were providing 42.5 percent of the income, federal sources 25.4 percent, state sources 13.5 percent, and other sources 18.6 percent.

Participation in the Program. All public schools in Delaware were participating in the National School Lunch Program; participation required that schools must offer meals to economically needy students at either free or reduced prices, dependent upon the level of family income and family size. The Delaware State Plan for 1973 was judged to be comprehensive, sound, and feasible.

Statistical data and relevant information were solicited for the study from the state School Food Service Supervisor and from each local school district. Only one school district failed to respond to requests for information; since this district was rather small, the researcher indicated that the absence of a return should have no appreciable effect upon the overall study.

Average daily participation in the program ranged from forty percent in one district to over eighty percent in another; the state level of participation was fifty-nine percent. The percentage of lunches served free or at a reduced price varied from one percent to sixty-nine percent; the state average was slightly over twenty-three percent.

Breakfast programs were available to slightly under twenty-five percent of the school children in 1971-72; however, only slightly over ten percent of the children were participating.

Efforts were made to analyze the per meal cost of food and labor in each school district, and questionnaires were sent to the school districts to gather data. When the responses were received, the data were found to be unreliable because of the wide variations in accounting practices among school districts. For example, some districts included the salaries of school lunch supervisors in labor costs and some did not. Also, some districts included the projected value of surplus commodities in food costs and others did not. Further, some districts included the costs of the breakfast program in the cost of the regular school lunch program and others did not. These data problems indicate the need for more reliable management information systems for the school

lunch program.

The price charged for school lunches was relatively standard throughout the state; the state supervisor reported that elementary children were charged from thirty to thirty-five cents per meal, with an average charge of little over thirty cents, and high school children were charged from thirty cents to forty cents, with an average charge of thirty-five cents. This cost is somewhat less than the price per meal charged in most states and is due principally to the policy of Delaware which provides state funds for payment of salaries for local school lunch managers and lunch supervisors.

Summary. Conclusions were rather limited, but several recommendations were offered:

1. Development of a management information system at both the state and local levels
2. Transfer of responsibility and authority for allocation, or both allocation and distribution, of federally donated commodities from the State Purchasing Agent to the State Supervisor of School Food Services
3. Investigation of the feasibility of consolidating purchasing functions of two or more school districts within geographical regions to reduce the costs
4. Promotion of higher levels of participation in present programs.

Critique. Although a relatively inexpensive component in comparison with some of the other technical components, the school food service program technical study did provide considerable data which would be of

interest to those concerned with planning and organizing school food service programs. As might be assumed, the researcher joined those of his colleagues who had recommended the development and installation of a management information system which will provide fiscal data related to the school food service program as well as data related to participating pupils and local district operation of programs.

Since very few studies of this type have been conducted throughout the nation, this study may have some transfer value to other states. Within the state of Delaware the major importance of the component will be related to its recommendations concerning the administration of the school food service program and the relationship between local school district personnel and school food service personnel with the Department of Public Instruction.

School District Productivity

As a result of current interest in accountability, the series of court cases, and various research reports related to equalization of funds among local school districts, high levels of interest are being exhibited in the "productivity" of the schools. One component of the Delaware study was concerned with the relative productivity of the state's local school districts and the factors associated with varying levels of productivity.

Purpose of the Study. The purpose of this study was to analyze the in-school and socio-economic variables which could be used as

predictive factors for high and low productivity school districts in Delaware. Attention was given to the relationship between current expenditure per pupil and standardized reading achievement test scores of pupils among school districts. Subsequently, school districts were classified as high productive or low productive districts. A list of variables purported to be associated with productivity was developed for testing, and step-wise discriminant analysis was used to test the variables for their association with productivity. The association of a variable with school district productivity was measured by the relative contribution of the variable to a mathematical function which predicted accurately the classification of a school district into either the high or low productivity group.

The productivity of a school district was defined by the amount of student performance realized for a given level of expenditure. Student performance was measured by the median district reading achievement raw score accomplished by fifth grade pupils on the Metropolitan Achievement Test in the fall of 1970. The level of expenditure was measured by the total current expense money for the 1969-70 school year. Current expense was defined in the traditional sense of expenses for administration, instruction, plant operation, maintenance, auxiliary services, and fixed charges. Debt service, capital outlay,and transportation were excluded. The per pupil current expenditure was calculated by dividing the total current expense of a district by the average daily membership for the 1969-70 school year.

The median district reading achievement raw score was related to district per pupil current expenditure by forming a regression line. This line represented the amount of achievement which could be expected for a given level of district expenditure. The regression line was defined as average productivity.

High productivity districts were those which achieved at a higher level than could be expected for their level of expenditure. Low productivity districts were those which achieved at a lower level than expected for their level of expenditure. Both groups of districts were identified, when listed graphically, as the districts which fell respectively above and below the regression line.

Research Analysis. Step-wise discriminant analysis was used to determine the variables associated with productivity. Two discriminant functions, or groups of predictor variables with their related weights for prediction, were developed. One function was a composite which included both socio-economic and in-school variables. The other discriminant function included only in-school variables or those variables over which the school district had some control.

The BMB07M Step-Wise Discriminant Analysis Program from the Biomedical Computer Program Package was used to develop the discriminants.

The percent of districts actually classified into one of the two productivity groups (high or low productivity) was calculated, and further statistical analysis was performed to ascertain the percent of variation between the two productivity groups which could be accounted for by each of the discriminant functions.

Review of Related Research. The researcher provided a somewhat extensive discussion of factors related to educational output and variables associated with student performance. From the analysis of the research the list of in-school and socio-economic and community variables was developed for the study.

Findings and Conclusions. Economic variables demonstrated significantly different mean values between the high productive and low productive groups. All significant in-school variables had high correlations with at least some of the socio-economic variables. A network of inter-correlations existed between the socio-economic variables. The multiple correlation between the reading achievement and adult education level, median income, and percent minority enrollment was .9025, indicating that these three socio-economic variables were associated with 81 percent of the variations in reading scores.

Median adult education level was the best single predictor of productivity. This single variable classified 91 percent of the districts; however, the variable had high correlations with income variables, median income, and percent of income tax returns above $10,000. The researcher contended that the relationship between higher educational attainment and higher personal income reflected a community attitude concerning schools. Districts in this grouping tended to pay their teachers better than average, had a higher percentage of master's level teachers, and were employing a lower percentage of teachers with less than four years of preparation. They also had higher achievement,

higher percentage of post high school education, lower dropout rate, and better attendance. These findings are supportive of the recent literature which indicates that better education leads to better income, a higher standard of living, and higher aspirations for educational attainment among children. The researcher indicated that, if motivational level affects educational attainment, programs should be designed which raise the motivational level.

In-school variables are related with socio-economic variables, but problems are encountered when attempts are made to credit a given amount of variation to a single variable. The analyses related to mean teacher salary, percentage of teachers with less than four years of training, and percentage of teachers with a master's degree or higher showed a significant difference between the mean values of high productive and low productive districts. The researcher suggested that consideration be given to funding programs which would attract more skilled teachers to the lower achievement areas.

The multiple correlation between the reading scores and the four in-school variables--advanced preparation of teachers, average class size, teacher preparation, and teacher experience--was .81913. This level of significance means that 67 percent of the variation in reading scores was associated with these in-school factors. Teacher experience was found to be significantly correlated with favo le deviations in reading scores from the level of performance which would be expected from the socio-economic characteristics of the district.

Attendance was not a predictor variable primarily due to its interrelatedness with other variables; however, a statistically significant difference did exist between the high and the low groups. The researcher suggested that consideration be given to modifications in funding programs which would encourage pupil attendance.

Critique. The general findings of this study were relatively similar to other national studies in the area. Points of difference were related to the opportunities for policy level intervention which would encourage school districts to hire teachers with higher levels of training and experience. The data also indicated that average class size was positively correlated with higher levels of achievement. As an exploratory study this research effort has revealed some very interesting findings. Further research in this area is needed to identify procedures through which positive effects could be made upon achievement through modifications in school funding programs.

Summary of Findings and Recommendations

This portion of the general study was prepared by the NEFP Central Staff and consisted of a description of the current state program, summaries of each of the technical studies, and the recommendations of the NEFP Central Staff. A rather exhaustive analysis of the current state program was presented.

The discussion of the procedures for assessing property in Delaware revealed that the upgrading of assessments apparently occurs only when new information is available through property ownership changes (sales)

or new construction or additions (building permits). Unless property has been subjected to a complete reevaluation, there seem to be no procedures for reevaluating property.

Summary of Special Studies. Rather than being a comprehensive summary of the special studies, the principal findings or conclusions of each study were presented. A consistent pattern was not followed among the studies, for data were presented in some instances and only conclusions were presented in others.

Evaluation of Delaware's Current Program. The Delaware provisions for financing the public schools were evaluated in terms of:

1. Extent to which the school finance plan equalizes educational opportunities within the state
2. The relative progressivity of the tax structure
3. The extent to which Delaware's provisions for financing meet the criteria for evaluating school finance programs developed by the NEFP.

The extent of equalization within the state was measured by a scale developed during Phase I of the NEFP. Under this scale Delaware ranked relatively high, ninth from the top in 1968-69. The data for Delaware were updated to reflect 1971-72 revenues, but state-by-state comparisons could not be made.

The relative progressivity of the tax structure was also measured by a scale developed by the NEFP during Phase I. In the progressivity of its tax structure Delaware ranked fifth from the top with a score of 25.3 for state taxes. Delaware's high ranking on the relative

progressivity of its school revenues is due to the state's providing a higher percentage of school revenue from state sources than most states.

On the subjective criteria used to evaluate a state's provisions for school financing, Delaware was in a relatively favorable position on most criteria.

Recommendations. The general thrust of the recommendations was to move toward greater state assumption of the cost of education. The survey staff recommended complete fiscal neutrality in school funding. Full state funding was recommended with the exception of a provision which would permit additional local revenue at the option of the citizens in the respective districts. These optional additional funds were to be percentage equalized as state funds, but were to be limited to not more than 10 percent of the total state funds a district would receive. This optional local leeway would provide funds for experimentation and innovation or for additional personnel and supplies beyond that provided in the regular state program.

Critique. Rather than recommending a comprehensive restructuring of the state school support program in Delaware, the study recommendations basically call for an updating and improvement of the present system. The essential difference was that the recommendations did call for complete fiscal neutrality with a percentage equalizing provision which would require that state funds be provided in relationship to the level of effort being made in the district and the district's local wealth.

The general format of the Summary was designed to permit this section to stand independently of the total study so that it could be distributed and would contain sufficient information for the reader to have an understanding of the study's components as well as a detailed report of the recommendations. The section meets these criteria and appears to have been well received by the Department of Public Instruction and the local school district superintendents.

DATA COLLECTION AND ANALYSIS

In all components except two--programmatic cost differentials and school food service--virtually all data used in the research study were available in published form from state sources. The researcher responsible for the school food service program did prepare an instrument which was distributed to the local school districts; however, much of the information in the final report was available in published form from the Department of Public Instruction. Researchers assuming responsibility for the programmatic cost differentials component relied heavily on data provided by local school districts. In the absence of a comprehensive management information system including pupil personnel data as well as fiscal accounting information in a programmatic format, the researchers had no other option except to secure data on questionnaire data gathering instruments and convert functional accounting reports into a program accounting format.

Since different people completed the forms in each local school district, questions of validity and reliability can obviously be raised.

The principal bibliographical sources used for three research components are contained in the Appendices. Appendix A contains the references for the state and local taxation component, Appendix B the references for the school personnel component, and Appendix C the references for the school construction component.

Data Items and Sources

Data for the educational need and cost differentials component were not as readily available from state sources, and the principal portion of the data had to be secured from local school districts. Data requirements for this component are listed in Table 5. As accounting procedures are changed and local school districts submit reports to the state in program accounting formats, problems related to availability of these data will diminish considerably.

The Division of Urban Affairs, University of Delaware has published a survey of revenues of state and local governments for the state; the publication used in this report was released in 1972. This source was heavily relied upon in the analysis of state and local taxation. The study by Professor John Due of the University of Illinois reported in Economic Factors Affecting the Financing of Education, Volume 2 of the National Educational Finance Project, was also used extensively in the analysis of the revenue conditions in Delaware. As indicated in Table 6, Survey of Current Business, a publication of the U.S. Department of Commerce, and Sales Management were the primary sources used in comparing Delaware with the nation on five fiscal capacity measures.

TABLE 5. TOPIC AND SOURCE OF BASIC DATA USED IN PROGRAMMATIC COST DIFFERENTIALS COMPONENT

DATA	SOURCE
Educational Programs Provided by Each School District in Delaware	Department of Public Instruction
Number of Time Equivalent Pupils and Cos[illegible]ach Program	Local School Districts
Regular Programs, Grades 1-12	Local School Districts
Preschool Program	Local School Districts
Educable Mentally Retarded, Elementary and Secondary	Local School Districts
Trainable Mentally Retarded, Elementary and Secondary	Local School Districts
Orthopedically Handicapped, Elementary and Secondary	Local School Districts
Blind and Partially Sighted, Elementary and Secondary	Local School Districts
Impaired Hearing, Elementary and Secondary	Local School Districts
Emotionally Maladjusted, Elementary and Secondary	Local School Districts
Learning Disabilities, Elementary and Secondary	Local School Districts
Vocational-Technical Education	Local School Districts
Compensatory Education Programs	Local School Districts
Homebound and Supportive Educational Services	Local School Districts

TABLE 6. TOPIC AND SOURCE OF BASIC DATA USED IN STATE AND LOCAL TAXATION COMPONENT

DATA	SOURCE
Types of Taxes and Jurisdictions Levying Them to Individuals	University of Delaware
Types of Non-Tax Revenue Received by Levels of Government	University of Delaware
Per Capita Personal Income for Delaware and the Nation	U.S. Department of Commerce, Survey of Current Business
Per Household Effective Buying Income for Delaware and the Nation	Sales Management
Per Capita Effective Buying Income for Delaware and the Nation	Sales Management
Per Capita Retail Sales for Delaware and the Nation	Sales Management
Per Household Retail Sales for Delaware and the Nation	Sales Management
Revenue Per Pupil in ADM for Delaware School Districts	Department of Public Instruction
Basic State Program Revenue	Department of Public Instruction
State Special Purpose Revenue	Department of Public Instruction
Local Revenue	Department of Public Instruction
Federal Revenue	Department of Public Instruction

Efforts to secure district-by-district data related to cost of delivering education or cost of living variations were apparently unsuccessful. As shown in Table 7 the data used in this research component were those typically found in reports of state education agencies, with the exception of limited material from the Delaware State Planning Office and the state's Department of Labor. These agencies provided information related to family income and wage rates. Information related to rental rates for housing and average value of housing was obtained from an independent research agency. Even though several data sources were used in this component, there is a general dearth of information which can be used in identifying cost of living variations among school districts within a state.

As suggested by the number of items in Table 8, research efforts of the personnel component can best be characterized as exhaustive. The table indicates that the Department of Public Instruction was the source for virtually all of the data, but some of these state education agency reports had drawn heavily from reports from the National Education Association and other national sources. This component was possibly the most comprehensive of the various studies, but questions concerning the relevance of the data to the final report and possible action alternatives may be raised.

TABLE 7. TOPIC AND SOURCE OF BASIC DATA USED IN COST OF DELIVERING EDUCATION COMPONENT

DATA	SOURCE
Income of Families in Delaware for 1959 and 1969	Delaware State Planning Office
Mean Family Income, 1969 by Census County Division	Delaware State Planning Office
Number and Percent of Total Families Living Below Poverty Level 1969 by Census County Division	Delaware State Planning Office
Median Earnings by Occupational Group for the State and Each County	Delaware State Planning Office
Building Construction Labor Cost by Craft for Each County	Department of Labor, State of Delaware
Average Value of Housing for each School District	Meslat Research, Inc.- Social Indicators Report
Average Monthly Rent for Each School District	Meslat Research, Inc.- Social Indicators Report
School District Enrollment for Grades K-12 (9-30-72)	Department of Public Instruction
Full Value of Real Estate for Each District	Department of Public Instruction
Average Daily Membership Current Expenses, by Functional Category, (1970-71) for Each District	Department of Public Instruction
Tax Rate in Each District for Current Expense on $100.00 of Full Value of Real Estate for 1970-71	Department of Public Instruction
Number of Transported Pupils Per Square Mile for Each District	Department of Public Instruction
Per Pupil Cost of Transportation for Each District	Department of Public Instruction

TABLE 8. TOPIC AND SOURCE OF BASIC DATA USED IN PUBLIC SCHOOL PERSONNEL COMPONENT.

DATA	SOURCE
Selected Delaware Data for 1966-67, 1967-68, 1969-70, and 1970-71	
K-12 Average Daily Membership	Department of Public Instruction
Number of Persons Serving in Instructional and Administrative Positions	Department of Public Instruction
Number of Administrative Units	Department of Public Instruction
Number of Buildings	Department of Public Instruction
Current Expenditures	Department of Public Instruction
Capital Outlay and Debt Service Expenditures	Department of Public Instruction
Other Expenditures	Department of Public Instruction
Total Expenditures	Department of Public Instruction
Local District Salary Expenditures for Instructional and Administrative Personnel	Department of Public Instruction
Local District Average Salaries for Instructional and Administrative Personnel	Department of Public Instruction
Per Pupil Cost (current ADM)	Department of Public Instruction
Bonded Debt	Department of Public Instruction
Delaware's Rank Among the 50 States for Years 1961, 1966, and 1971	
Estimated School Age Population (5-17)	Department of Public Instruction
Total Population	Department of Public Instruction

TABLE 8. (Continued)

DATA	SOURCE
Percent of Population Age 65 or Over	Department of Public Instruction
Percent of Population Classified As Urban	Department of Public Instruction
Public School Fall Enrollments	Department of Public Instruction
Estimated Average Salary for All Teachers in Public Schools	Department of Public Instruction
Estimated Average Salary of Instructional Personnel in Public Schools	Department of Public Instruction
Median School Years Completed by Persons 25 Years and Older	Department of Public Instruction
Per Capita Personal Income	Department of Public Instruction
Revenue for Public Elementary and Secondary Schools From Local Sources	Department of Public Instruction
Revenue for Public Elementary and Secondary Schools From State Sources	Department of Public Instruction
Revenue for Public Elementary and Secondary Schools From Federal Sources	Department of Public Instruction
Per State Expenditures for All Education	Department of Public Instruction
Per Capita Current Expenditures for Public Elementary and Secondary Schools	Department of Public Instruction
Number of Classroom Teachers in Delaware by Decade from 1930 to 1970	Department of Public Instruction

TABLE 8. (Continued)

DATA	SOURCE
Average Salaries for Classroom Teachers in Delaware by Decade From 1930 to 1970	Department of Public Instruction
Comparative Profile of Public Education in Delaware, Maryland, New Jersey, and Pennsylvania, and National Totals	Department of Public Instruction
Estimates of Total Population, 1970	Department of Public Instruction
Percent of Change in Total Population 1960-70	Department of Public Instruction
Estimated School Age Population, July 1, 1971	Department of Public Instruction
Number of Basic Administrative Units, 1971-72	Department of Public Instruction
Public School Enrollment, Fall, 1971	Department of Public Instruction
Total Instructional Staff (Full-time Equivalency in Public Schools), October 1970	Department of Public Instruction
Pupil/Teacher Ratio in Public Elementary and Secondary Schools, Fall, 1970	Department of Public Instruction
Estimated Average Salary for All Teachers in Public Schools, 1971-72	Department of Public Instruction
Percent of Public School Teachers Paid $9,600 or More, 1971-72	Department of Public Instruction
Estimated Average Salary of Instructional Staff in Public Schools, 1971-72	Department of Public Instruction
Percent Increase in Instructional Salaries, 1961-62 to 1971-72	Department of Public Instruction

TABLE 8. (Continued)

DATA	SOURCE
Percent Increase in Instructional Staff Salaries, 1970-71 to 1971-72	Department of Public Instruction
Percent Increase in Number of High School Graduates, 1965-1966 to 1970-71	Department of Public Instruction
Per Capita Personal Income, 1970	Department of Public Instruction
Public School Revenue Receipts Per Pupil in ADA, 1971-72	Department of Public Instruction
Revenue for Public Elementary and Secondary Schools From Local Sources, 1971-72	Department of Public Instruction
Estimated Percent of Revenue for Public Elementary and Secondary Schools From State Sources, 1971-72	Department of Public Instruction
Estimated Percent of Revenue for Public Elementary and Secondary Schools from Federal Sources, 1971-72	Department of Public Instruction
Per Capita State Expenditures for All Education, 1970	Department of Public Instruction
Estimated Current Expenditures for Public Elementary and Secondary Schools Per Pupil in ADA, 1971-72	Department of Public Instruction
Percent Increase in Estimated Expenditures for Pupil ADA, 1961-62 to 1971-72	Department of Public Instruction
Current Expenditure Per Pupil in ADM, 1971-72	Department of Public Instruction

TABLE 8. (Continued)

DATA	SOURCE
Beginning Teacher Salaries for Each District in Delaware, 1971-72	Department of Public Instruction
Per Pupil Expenditures for Each Administrative Unit in Delaware, 1970-71	Department of Public Instruction
Number of Pupils in Each District in Grades K-12 for Fall, 1971	Department of Public Instruction
Average Teacher Salary in Each District, 1970-71	Department of Public Instruction
Salaries for Delaware Public School Professional Personnel, 1970-71 (From State Sources and Federal Sources)	Department of Public Instruction
Administrative Personnel	Department of Public Instruction
Instruction-Classroom Teachers	Department of Public Instruction
Other Instructional Personnel	Department of Public Instruction
Attendants and Social Workers	Department of Public Instruction
Health Service Personnel	Department of Public Instruction
Educational Personnel in Delaware Public Schools by Position -- Number and Total Salaries, 1970-71	Department of Public Instruction
Administrative Personnel	Department of Public Instruction
Classroom Teachers	Department of Public Instruction
Other Instructional Personnel	Department of Public Instruction
Attendants and Social Workers	Department of Public Instruction
Health Service Personnel	Department of Public Instruction

TABLE 8. (Continued)

DATA	SOURCE
Supply of Educational Personnel in Delaware for 1971-72 (New and Old Employees)	Department of Public Instruction
Without Previous Education Experience	Department of Public Instruction
Reentering Education	Department of Public Instruction
Transfers from Outside Delaware	Department of Public Instruction
Transfers from Other Districts in Delaware	Department of Public Instruction
Position Vacancies and Applicants by Teacher Assignment Category, 1971-72 to 1972-73 School Year	Department of Public Instruction
Elementary Personnel by Area of Assignment	Department of Public Instruction
Secondary Personnel by Area of Assignment	Department of Public Instruction
Ungraded Personnel by Area of Assignment	Department of Public Instruction
Special Assignment Teachers by Area	Department of Public Instruction
States Where Professional Personnel Received Bachelors Degree	Department of Public Instruction
Administrative Personnel	Department of Public Instruction
Classroom Teachers	Department of Public Instruction
Other Instructional Personnel	Department of Public Instruction
Attendants and Social Workers	Department of Public Instruction

TABLE 8. (Continued)

DATA	SOURCE
Health Service Personnel	Department of Public Instruction
Occupational Status of Delaware Graduates in Education by Year from 1966 to 1971	Department of Public Instruction
Number of Graduates	Department of Public Instruction
Number of Graduates in Teaching Positions	Department of Public Instruction
Number of Graduates Not in Teaching Positions	Department of Public Instruction
Graduates Teaching in Delaware	Department of Public Instruction
Graduates Teaching Outside Delaware	Department of Public Instruction
Graduates from the University of Delaware and Delaware State College by Subject Area Trained in Delaware and Teaching in Delaware	Department of Public Instruction
New Professional Education Certificates Issued in Delaware by Year from 1963-64 to 1970-71	Department of Public Instruction

The school facilities section in the Department of Public Instruction was able to provide the range of data required for the "Financing School Construction" component. As shown in Table 9, the state education agency furnished historical data as well as planning data. This range of information was invaluable in assisting the researchers as they analyzed the past patterns and projected the future needs of the state. (The assumption should not be made that this condition is typical, for the quantity and quality of Delaware's data is much greater than in most states.)

Projections of pupil transportation program needs were also available from existing state reports. The Department of Public Instruction was the primary source for the data listed in Table 10. The researcher responsible for the transportation component conducted independent research for the purpose of comparing Delaware's program with other states. Sources for the data from the other states were not listed in the technical report, but data for the "unidentified" states in all likelihood were secured from the state education agencies in the respective states.

Required reports submitted by local school districts and summarized by the Department of Public Instruction provided virtually all of the information used in the school food service component. The list of data items is contained in Table 11. Questionnaires were used to secure data from local school districts.

TABLE 9. TOPIC AND SOURCE OF BASIC DATA USED IN FINANCING SCHOOL CONSTRUCTION IN DELAWARE COMPONENT

DATA	SOURCE
Expenditures for School Buildings, Site, and Equipment for Delaware, 1964-64 to 1970-71	Department of Public Instruction
School Building Project Authorization, Fiscal 1967 Through Fiscal 1972	Department of Public Instruction
Number of Delaware Pupils by District Grouped According to Number Housed in Buildings Occupied Before 1950 and Buildings Constructed After 1950	Department of Public Instruction
Total Outstanding Debt of the State of Delaware for the State Share of School Construction	Department of Public Instruction
Scheduled Final Payments on Existing Outstanding Debt from 1971 Through 1991	Department of Public Instruction
School Bond Principal and Interest Payments from 1966-67 to 1970-71	Department of Public Instruction
Local Bonded Debt for School Building Purposes (Total and Per Pupil)	Department of Public Instruction
Assessed Valuation for Each Delaware School District, 1970-71	Department of Public Instruction
Bonded Debt Potential for Each Delaware School District, 1970-71	Department of Public Instruction
Bonded Debt Outstanding for Each Delaware School District, 1970-71	Department of Public Instruction
Debt Service (Principal Retirement Plus Interest) for Delaware School Districts, 1963-64 to 1970-71)	Department of Public Instruction
Debt Service Tax Rates per $100.00 on Assessed Value and Full Value of Real Estate and Capitation Tax, 1972-73	Department of Public Instruction

TABLE 9. (Continued)

DATA	SOURCE
Projected Enrollment for Delaware School Districts for 1975	Department of Public Instruction
Projected Plant Capacity for Delaware School Districts for 1972	Department of Public Instruction
Projected Enrollment for Delaware School Districts, 1975-80	Department of Public Instruction
State and Local Appropriations for Minor Capital Improvements, 1968-71	Department of Public Instruction

TABLE 10. TOPIC AND SOURCE OF BASIC DATA USED IN PUPIL TRANSPORTATION PROGRAM COMPONENT

DATA	SOURCE
Number of Public School Children Transported by County, 1968-69 to 1971-72	Department of Public Instruction
Total Nonpublic School Children Transported, 1968-69 to 1971-72	Department of Public Instruction
Public School Students Transported, by Category, 1968-69 to 1971-72	Department of Public Instruction
Regular Public School Children	Department of Public Instruction
Special Public School Children	Department of Public Instruction
Voch-Tech Public School Children	Department of Public Instruction
Public School Enrollments by County, 1968-69 to 1971-72	Department of Public Instruction
Nonpublic School Enrollments, 1968-69 to 1971-72	Department of Public Instruction
Number of Public and Nonpublic Children Transported, 1968-69 to 1971-72	Department of Public Instruction
Predicted Public School Enrollments, 1973-74 to 1976-77	Department of Public Instruction
Projected Number of Transported Public and Nonpublic School Children, 1973-74 to 1976-77	Department of Public Instruction
Public School Transportation Expenditures, by County, 1968-69 to 1971-72	Department of Public Instruction
Nonpublic Pupil Transportation Cost, 1968-69 to 1971-72	Department of Public Instruction
Combined Public and Nonpublic State Transportation Costs, 1968-69 to 1971-72	Department of Public Instruction

TABLE 10. (Continued)

DATA	SOURCE
State Reimbursement for Local School Transportation Operation	Department of Public Instruction
Fixed Charges Reimbursement	Department of Public Instruction
Operation Allowances Reimbursement	Department of Public Instruction
Administrative Allowances Reimbursement	Department of Public Instruction
Reimbursement for Contract Transportation Operations	Department of Public Instruction
Depreciation Costs	Department of Public Instruction
Fixed Charges Reimbursement	Department of Public Instruction
Operation Allowance Reimbursement	Department of Public Instruction
Administrative Allowance Reimbursement	Department of Public Instruction
Reimbursement Provisions for Non-public Schools, Public Carriers, and Private Autos	Department of Public Instruction
Public Transportation Costs in Delaware and Selected States	Independent Research
Cost Per Pupil Per Year	Independent Research
Cost Per Mile	Independent Research
Cost Per Pupil by a School District, 1971-72	Independent Research
Transported Pupils Per Square Mile by School District, 1971-72	Independent Research

TABLE 11. TOPIC AND SOURCE OF BASIC DATA USED IN SCHOOL FOOD SERVICE PROGRAMS COMPONENT.

DATA	SOURCE
Federal Funds for School Food Service Programs, 1971-72	Department of Public Instruction
Lunch	Department of Public Instruction
Breakfast	Department of Public Instruction
Special Milk	Department of Public Instruction
Non-food Assistance	Department of Public Instruction
SFPC (day care)	Department of Public Instruction
School Lunch Income, 1971-72	Department of Public Instruction
Child Payments	Department of Public Instruction
Federal Payments	Department of Public Instruction
State Payments	Department of Public Instruction
Other Sources	Department of Public Instruction
School Lunch Program Expenditures, 1971-72	Department of Public Instruction
Food Expenditures	Department of Public Instruction
Labor Expenditures	Department of Public Instruction
Other Expenditures	Department of Public Instruction
School Lunch Program Data by District	Department of Public Instruction
Number of schools Serving Lunch	Department of Public Instruction
Average Daily Attendance	Department of Public Instruction
Average Daily Participation	Department of Public Instruction

TABLE 11. (Continued)

DATA	SOURCE
Number of Free and Reduced Price Lunches	Department of Public Instruction
Breakfast Program by District	Department of Public Instruction
Number of Schools Serving Breakfast	Department of Public Instruction
ADA	Department of Public Instruction
Average Daily Participation	Department of Public Instruction

U.S. Census data and Department of Public Instruction sources furnished most of the detailed information required for the school district productivity component. In Table 12, the only additional source for data, beyond these two, was the National Educational Finance Project's publication on personal income by school district. This source was derived from data secured from the United States Office of Education and the Internal Revenue Service.

As indicated in Table 13, all data used in the "Summary and Recommendations" were available from Department of Public Instruction sources. Some of these items were duplications of those used in the various research components, but the type of utilization was different and the focus was on the total study rather than one independent research component.

Data Gathering Procedures

The great majority of the data was available in published reports from the Department of Public Instruction; the principal exception was in the programmatic cost differentials component. In this instance data forms were forwarded to local school districts to secure programmatic expenditure information for development of cost differentials and indices.

TABLE 12. TOPIC AND SOURCE OF BASIC DATA USED IN SCHOOL DISTRICT PRODUCTIVITY COMPONENT

DATA	SOURCE
Mean Annual Teachers Salary for Each School District	Department of Public Instruction
Beginning Teachers Salary for Teachers With a Bachelors Degree	Department of Public Instruction
Percent of Teachers With Less Than 4 Years Training	Department of Public Instruction
Percent of Teachers With at Least Masters Degree	Department of Public Instruction
Ratio of Pupils in ADM to the Number of Certified Non-teaching Personnel	Department of Public Instruction
Ratio of Pupils in ADM to the Number of of Classroom Teachers	Department of Public Instruction
Mean Years of Experience of District Teachers	Department of Public Instruction
Ratio of Local School Revenue Per Pupil to Adjusted Gross Income Per Pupil	Department of Public Instruction
Percent of Total Current Expenditures Funded for Instruction	Department of Public Instruction
Median Years of Schooling of Adult Population	Department of Commerce, U.S. Census
Percentage of Pupils Eligible for Title I Instruction under ESEA	Department of Public Instruction
Percentage of Pupil Enrollment That is Nonwhite, Spanish Speaking, Oriental, or American Indian	Department of Public Instruction
Percent of Dropouts	Department of Public Instruction

TABLE 12. (Continued)

DATA	SOURCE
Median Income for Families Within School District	Department of Commerce, U.S. Census
Percent of Family in Unrelated Income, as Reported in 1970 Federal Census That was Below $3,000	Department of Commerce, U.S. Census
Percent of Family in Unrelated Income, as Reported in 1970 Federal Census That was Above $10,000	Department of Commerce, U.S. Census
Percent of Graduates Receiving Post High School Education or Training	Department of Public Instruction
Percentage of Gross Income Less Than $3,000	National Educational Finance Project
Percentage of Gross Income Over $10,000	National Educational Finance Project
Median Reading Achievement Test Raw Scores On a District Basis	Department of Public Instruction

TABLE 13. TOPIC AND SOURCE OF BASIC DATA USED IN SUMMARY OF FINDINGS AND RECOMMENDATIONS COMPONENT

DATA	
Revenue Receipts 1971-72	Department of Public Instruction
State Funds for the Public Schools 1971-72	Department of Public Instruction
Federal Funds for the Public Schools 1971-72	Department of Public Instruction
Revenue Receipts from Local Sources 1971-72	Department of Public Instruction
Revenue Receipts Per Pupil (ADA) by District, 1971-72	Department of Public Instruction
Current Expenditures by District for Schools and Community Service	Department of Public Instruction
Current Expenditures by the State for Insurance, Social Security, Pensions, and Blue Cross	Department of Public Instruction
Debt Service by Local School Districts	Department of Public Instruction
Debt Service by State for School Bonds	Department of Public Instruction
Outgoing Transfer Payments	Department of Public Instruction
Capital Outlay Expenditures from Revenue Receipts	Department of Public Instruction
Summary of Current Expenses of School Districts, 1971-72	Department of Public Instruction
Full Valuation Per Pupil Enrolled by School District	Department of Public Instruction
Tax Rate Based on Full Valuation by School District	Department of Public Instruction

Neither researchers responsible for individual study components nor members of the NEFP Central Staff found it necessary to visit individual school districts for data gathering purposes. If data were required from local districts, reporting forms were prepared and Department of Public Instruction personnel forwarded the forms to local districts with instructions that the forms be returned to the department. With the level of involvement and support from the Department of Public Instruction, the entire study carried a much more "official" status than would have been the case if each researcher individually had contacted local districts.

Data Applications and Displays

Only limited statistical analysis was used in the various research components. Typically, simple straight line projections were used to predict future conditions. The school district productivity was the only component in which refined statistical approaches were used.

Research techniques utilized in the school district productivity component were somewhat unique and have been used only in the NEFP research efforts. Median district reading achievement raw score was related to district per pupil current expenditure through a regression line. This line was used to indicate the amount of achievement which could be "expected" for a given level of district expenditure. By using this regression line of "average productivity", high and low productivity districts were identified.

Step-wise discriminant analysis was then used to determine the variables associated with productivity. Two discriminant functions, or groups of predictor variables with related weights, were developed. One was a composite which included both socio-economic and in-school variables. The other function included only in-school variables or those over which the school had some control.

The Step-Wise Discriminant Analysis Program from the Biomedical Computer Program Package was used in the statistical application. This research technique has considerable potential in providing for depth analysis of achievement and expenditures with appropriate weights being assigned for socio-economic and in-school variables.

Fiscal policy makers can have little impact on socio-economic variables, but there is the distinct possibility that research relating to the in-school variables may provide insights into possible modifications which can be made in state school support programs. For example, fiscal policy-makers may identify possible manipulations which may be made in in-school variables to increase productivity.

As a survey research effort designed to be of direct benefit to a broad range of potential consumers concerned with possible changes in state school support fiscal policies, the intent of the study was not to perform highly sophisticated statistical analyses of data, but was to discuss, analyze, and present data in an easily understandable form. Typical data analyses included arithmatic means, indices, ranks, ratios, and percentages. These approaches provided the researchers with sufficient insight to make the necessary observations, conclusions,

and recommendations. Potential consumers should have little difficulty in understanding and interpreting the studies.

Tabular presentation was the common method used in displaying the data in the various research components. In some instances bar graphs were used to present data when this approach would make the information more understandable to the reader. (The basic assumption in the presentation of the data appeared to be that the reports were being prepared for lay readers and policy makers rather than theoretical researchers.)

DEVELOPMENT OF THE FINAL REPORT

The structure of the study of public elementary and secondary schools in Delaware contributed to a higher level of objectivity in the formulation of the final recommendations than in studies conducted under different conditions. Responsibility for formulating final recommendations rested solely with the NEFP Central Staff, and no in-state group or agency had review or approval authority. The NEFP Central Staff maintained a high level of professional independence throughout the study.

Several meetings were held with the Commissioner of Education and his staff and also with superintendents from local school districts, but these meetings were conducted to obtain an initial critique of the overall study design and secure input and reactions at various stages of the study. Throughout the study an independent posture was maintained, and all parties understood that the NEFP Central Staff was responsible for preparing a set of recommendations which reflected the staff's best professional judgment based upon the findings and recommendations of the technical components and the staff's expertise and experience.

Initial Efforts

The process used in the development of the final report involved several sequential steps. First, the researchers responsible for the various research components presented recommendations or conclusions in the latter section of their formal report. These were synthesized by the NEFP Central Staff to determine points of conflict or overlap.

On some occasions a component report was edited to eliminate superfluous material and comments unrelated to the central thrust of the study. The technical researchers were requested to present alternatives rather than a single recommendation; this approach reduced the possibility of direct conflict between the final recommendations of the study and those presented in the various technical components. Following review and editing by the central staff, the reports were retyped for inclusion in the final document submitted to the Commissioner of Education and the Delaware State Board of Education.

As a second step in the formulation of recommendations, members of the NEFP Central Staff reviewed the findings and recommendations of the various research components to identify major areas of concern. When these had been isolated the study coordinator discussed them in a general fashion with the Commissioner of Education, key members of his staff, and the superintendents from local school districts. After securing their reactions, the NEFP Central Staff analyzed their reactions to identify points of conflict or possible areas of omission in the technical components. Concurrently with the technical studies being conducted by the researchers responsible for the individual components, members of the NEFP Central Staff also conducted a review and analysis of the total Delaware state school support program. From this effort certain areas of concern were identified which were beyond the scope of the individual research components. These efforts are reflected in the first part of the "Summary and Recommendations" section of the final report.

Major Considerations

The final step in the formulation of the recommendations was completed by the NEFP Central Staff. By drawing upon the research in the individual components and the work of the central staff, as well as the staff's general expertise, the final recommendations of the entire study were formulated. Certain values and current national movements, as well as the unique factors associated with the structure of public elementary and secondary education in Delaware, were considered in the formulation of the final recommendations.

Among the externalities considered in the development of the final recommendations was the current litigation in the courts which is questioning the appropriateness of state school support programs which do not seek to provide equal access to fiscal resources among school districts within a state. Concurrent with this interest is the public quest for greater taxpayer relief and a reduction in the degree of reliance upon the local property tax as a major source of school revenues.

Other national movements are related to the degree of state support for school transportation and capital outlay and debt service programs. Nationally, considerable interest is evident in efforts to increase the level of state support for both of these programs because of the variations in their degree of incidence among school districts within a state. For example, one district may transport a significantly higher percentage of its pupils than another; therefore, unless the state provides a major portion of the support for the transportation

program, the local district will be required to divert funds from direct instructional activities to provide the needed level of service.

In the area of school construction or capital outlay and debt service, one district may be experiencing a growth in its pupil population and another may have a stable or declining pupil population. One may have completed its building projects, and another may have a large percentage of its facilities which are educationally obsolete. The net result is that the need for capital outlay and debt service funds will not be uniform among districts within a state, and some observers contend that the state has the responsibility to provide varying levels of support if the primary aim is to assure adequate housing for the students and their educational programs.

A further example is reflected in the national interest in providing varying levels of funding for different target groups of pupils. As states assume responsibility for providing educational programs oriented to the individual needs and occupational goals of all pupils, the question arises relative to whether or not equal funds for all pupils will permit the school district to provide the required differentiated programs. Research conducted by the NEFP during Phase I, as well as accepted practice in funding special education and vocational-technical programs, indicates that different dollar amounts per pupil must be provided if local districts are to have sufficient funds to support the variety of programs required to serve the different interests and needs of the total school population. For this reason,

the cost differential component was included in the design of the study, and the recommendation was made that these differentials be incorporated into the overall design of the state school support program.

Various in-state factors also were considered in the formulation of the final recommendations. Delaware is a relatively small state in terms of both school population and square miles. Differences do exist among districts, but they are not as extreme as in other states, e.g., Delaware has only three counties and twenty-six school districts. Communication and coordination from the state education agency can be accomplished much more easily than in a state with several hundred school districts and 50 to 100 counties. In essence, the governing structure for schools and small size of the state permits the Commissioner of Education to work more closely with the local superintendents; in fact, he meets with them as a group in a virtual cabinet or administrative council for the schools of the state.

Historically, the state education agency has been deeply involved in school facility assessment and planning. The state's information system is much more comprehensive than one would find in the typical state; therefore, greater equity can be achieved by allocating capital outlay and debt service support based upon need rather than using distributions based upon the number of pupils or teacher units irrespective of the actual variations in need among school districts.

The same conditions apply to state support for pupil transportation programs and also the administration of the programs. Delaware's transportation program is considerably more advanced than in the typical

state, for the program currently is administered on a multi-district basis with the administrative organization being determined by the existence of pupils to be transported rather than the assumed necessity that each district should operate its own transportation program. With the administrative organization contributing to greater efficiency in operation, the state can then determine and recognize "approved costs" in the distribution of funds. The less desirable alternative is for the state to rely upon an arbitrary formula which assumes high levels of standardization among programs, when in fact, programs operate under very diverse conditions.

Formulation of the Recommendations

After review of this input from the various technical components and the central staff studies and after consideration of the political and demographic factors related to the public elementary and secondary schools in Delaware, the NEFP Central Staff formulated the final recommendations for submission to the Commissioner of Education and the Delaware State Board of Education. These recommendations represented a composite of the best professional judgment of the experts involved in the total study.

Preliminary discussions were held with the Commissioner of Education and his immediate staff and also with the assembled superintendents from local school districts, but the recommendations were prepared by the NEFP Central Staff and should not be interpreted as representing the position of either the Commissioner and his staff or the local

school superintendents or the Citizens' Advisory Committee. If "trade-offs" or modifications are required to secure enactment of recommendations into statute, that process must come as the recommendations are reviewed and analyzed, for premature assumptions were not made concerning the "political acceptability" of various recommendations as they were being formulated.

EVALUATION

In view of the magnitude of this study, the evaluation has been approached from a variety of perspectives. The first is an assessment of the degree to which the basic objectives were accomplished. The second is a critique of the research techniques. A third is concerned with possible modifications in the total study effort. The fourth area constitutes a discussion of further research suggested by the total study and its individual components. The last section provides some initial evaluative input concerning implementation of the study's recommendations. One component of the study, or the total study, could rank very high in one area and also rank very low in another.

Evaluating the study in terms of its contribution to positive policy changes may be unfair, for the study may be technically sound but not fare well on this criterion if no positive changes could be associated with the study. Bringing about positive changes is heavily dependent upon the quality of the dissemination and "selling" efforts which follow the submission of the study. The relevant question in this area is the degree to which attempts to generate "grass roots" support have been successful, and this may or may not be related to the quality of the research effort. In fact, the overall design of this study did not incorporate involvement of "decision makers" in any phase; the venture was perceived as a technical research effort to be reported to the State Board of Education and the Citizens' Advisory Committee. For this reason no attempt will be made to evaluate the study in terms

of its contribution to changes in school fiscal funding policies.

Basic Objectives

The basic objectives of the study were to provide the Department of Public Instruction, the State Board of Education, and the Citizens' Advisory Committee with a status report and recommendations for improving the state school support program in Delaware, and to complete this report in ample time for consideration and translation into modifications and changes in the state school support program. In retrospect, these objectives were met through completion and submission of the research components and the summary and recommendations. In the following discussion attention will be given to the factors of time, cost, and agency involvement.

Time. The impact of the constraints placed on the study by the Department of Public Instruction must be recognized: The time schedule of the project required submission of the final product within a period of approximately six months. This constraint made it necessary for research efforts to rely heavily upon data already available in the Department of Public Instruction and precluded the possibility of securing experimental research data from individual schools or classrooms. However, in terms of the degree to which the basic objectives were achieved, the time constraint did not appear to have been a hindrance to the study.

All of the studies except "Educational Need and Cost Differentials" were completed and submitted within the time schedule. Even though

mention of the relative value of using the cost differential approach in funding was included in the summary and recommendations section, the relative contribution of this research component was reduced considerably because its findings could not be incorporated into either the written or oral reports when they were presented to the Commissioner of Education, the Citizens' Advisory Committee, and other interested parties. Reportedly, logistical and data gathering problems were the reasons for the delay in receiving this report.

Cost. Using the criterion of economic-efficiency and comparing the study process with efforts in other states, the identifiable dollar cost in terms of consultant contracts and allocated NEFP budget was only a small portion of the level of funding which would have been required if a state research staff would have conducted the study or if an independent agency had contracted for the entire venture. The existence of the NEFP as an operational entity and the research component method for organizing the study were the primary factors contributing to the relatively low budget for the total study.

In all fairness, note must be made of the mantime for the study contributed by the Department of Public Instruction and the local school districts. No effort was made to compute either the approximate mantime or cost provided from these agencies; however, the amount may not have been as great as might be assumed because the researchers relied heavily upon data already in published form in the Department.

Agency Involvement. Working relationships with the Department of Public Instruction appear to have been most satisfactory. The quantity

and quality of data being maintained in the Department in all likelihood were major factors contributing to the relative satisfaction on the part of all parties. The only exceptions to the above were in the food services and educational need and cost differentials components. In each instance data had to be secured from local school districts. Staff members in the Department were most cooperative, but some time delay was experienced in distributing and collecting the data forms which had to be completed by the local school districts. Evidently, the problems were not attitudinal, but were more related to the logistical sequence involved in distributing, completing, and receiving the data forms.

Local school district superintendents were involved in the study at three points—the preplanning meeting before the study was initiated, the progress report session midway during the study, and also the final report at the conclusion of the study. Informal discussions with several local superintendents and reports from the Commissioner and his staff indicated that the general opinion of this group was that the level of involvement had been adequate and that the group had been accorded ample opportunity to provide input for the study.

Relative Success of Study Techniques

The basic intent of the venture was to conduct an interrelated series of status studies through which certain conclusions and recommendations could be formulated concerning Delaware's state school support program. In large measure, this goal was achieved. One of the basic problems is that portions of the data had little, if any, direct relevance to the

conclusions and recommendations. This was especially true in the personnel component; however, one might contend that many of the seemingly unrelated items were of value because they either suggested that there was no problem in a particular area or provided evidence and support for certain fiscal policies related to personnel matters.

Research Components. Each research component achieved its basic mission except the one concerned with the cost of delivering education. Data were simply not available which would enable the researcher to reach definitive conclusions on this matter. The assumption that data from state and private agencies would be sufficiently comprehensive to permit analysis and generalizations proved to be invalid. In all other components sufficient data were available.

In two studies, Pupil Transportation and School Food Service, the researchers became somewhat involved in discussing and analyzing operational and administrative matters and did not restrict their discussion to fiscal policy concerns. In defense of the researchers the point can be made that one cannot legitimately study the financing of these areas without also considering the quality of their administration and possible operational improvements which would contribute to increased economic-efficiency.

Central Staff Efforts. The central staff restricted its research efforts to analyzing the existing state support program, reviewing the findings and recommendations of the various research components, and preparing recommendations for modifying and improving the state's program. The formal report presents a comprehensive and concise overview of the existing program, but the discussion of each of the research

components lacks consistency in form and depth of treatment.

In the latter sections of the Summary and Recommendations the conclusions and recommendations are concisely presented in a relatively non-technical fashion. Legislators and informed laymen will have little difficulty in grasping the principal points and should be able to visualize the funding changes suggested for the various components of the state school support program.

Possible Modifications in the Study Effort

Scheduling and coordination appear to be the major areas in which the study process could have been modified to improve the quality of the overall product and also to reduce the duplicated effort on the part of the individuals responsible for various research components.

Time. The time frame imposed by the Department of Public Instruction was too restrictive to permit a thorough review and analysis of the various technical components before preparation of the summary and recommendations section. The time span for completion of the components, 3-4 months, must be viewed as minimal and could not be reduced. The central staff was scheduled to complete and submit the report within sixty days after receipt of the technical components; this schedule did not provide sufficient time for interaction with the individual researchers and forced the central staff to begin its conceptualization process before all component reports had been received.

Coordination. Considerable duplication in data gathering efforts could have been eliminated if planning sessions could have been scheduled for the individual researchers, NEFP Central Staff members, and

staff members from the Department of Public Instruction. The planning sessions would have obvious merit, but were not feasible because of time constraints of the completion date, previous commitments of the individual researchers, and budgetary restrictions which did not provide sufficient funds for work sessions. One of the advantages of this coordinated effort could have been the generation of a common data set to be used by each researcher. Granted, additional data would have been required for each technical component, but considerable man-time could have been saved as well as reducing the possibility of conflicting data. Another advantage of the planning session would have been that individual researchers would have had a better understanding of the overall effort, their contribution to the effort, the role of the central staff, and the limitations and delimitations placed on the individual components as well as on the entire study.

Even though greater coordination would have had obvious merit, the pattern of individual research efforts did permit the involvement of a team with high levels of expertise in a variety of technical areas. This range of expertise would not have been possible if the organizational pattern would have called for high levels of coordination and multiple planning and reporting sessions.

Research Techniques. With the research team's extensive experience in studies of state school support programs, the choice of rather simple statistical techniques was indicative of the intent to formulate a document which would be of direct value to those interested in studying and revising state school finance programs. Involved statistical analyses might appear to have been desirable by theoretical

researchers or consumers of research, but these groups were not the primary audience for the report.

Additional factors which contributed to the choice of data treatment were the limited number of districts in the state and the size of the budget for each of the components. Involved statistical treatment was not deemed necessary in view of the size of the total population. Significant budgetary increases would have been required to support computer oriented data analyses. In some components considerable attention was devoted to operational and administrative concerns which do not lend themselves to statistical treatment.

The principal statistical techniques used in the study were arithmetic means, indices, rankings, ratios, and percentages. These provided the research team with sufficient information and depth to identify needed changes and possible modifications in the state school support program. By using simple and multiple correlations, further analyses would have been possible in the state and local taxation and public school personnel components. If adequate data had been available, more sophisticated techniques could have profitably been used in analyzing the data and the cost of delivering education component. In other states with larger numbers of school districts, possibly consideration should be given to more advanced research techniques.

Further Research

Several of the components consisted of status reports and were more survey than analytically oriented; however, the data base and analyses provided through these components were invaluable to the total study effort. Following a careful analysis of each research component,

three components have been identified which need additional research attention, both in terms of the sophistication of the research design and additional field research efforts. The Cost of Delivering Education component is an area of major interest, shown by the statements of the President's Commission on School Finance to state legislatures throughout the nation. As pressures for local property tax relief mount and movements toward full state funding are discussed, questions continue to be raised concerning the relative level of funding required to provide equivalent services and programs in all districts. A critique of that component in this study suggests that much additional work is needed on both the research design and identification of data sources which are needed and also are available on a district-by-district basis.

In the area of educational needs and cost differentials, further research is needed to identify the factors which contribute to the differences in the level of expenditures for various programs in local districts. Secondly, research efforts could be expedited if the existing expenditure accounting systems were restructured to provide data in a program format. A third concern in this area is related to the techniques used to identify programs and districts to be used in the sample. Prior efforts have used "best practice" or "comprehensive program" districts as the sample population. This assumes that current practice is desirable; possibly, some consideration could be given to developing a theoretical model of an expenditure pattern which would reflect "desired practice". As another alternative, consideration might be given to identifying "high productive" school districts and using this

group as the sample population for the cost differentials study.

Currently, educational productivity appears to attract extremely high levels of interest from all segments of society from lay citizens to legislators to professional educators. Continued efforts should be made in this area to ascertain if "education does or does not make a difference". Refinements are needed in the basic research design to reduce the impact of overlapping variables which may "mask" the critical elements which contribute to the differences in levels of productivity. Rather than continuing to demonstrate that children from high income homes are also high achievers, attention should be given to the school-controllable variables. Findings and conclusions related to this latter concern may then be analyzed to identify implications and suggestions for changes in funding mechanisms for state school support programs.

Implementation

At this time, it is somewhat premature to project the degree to which the recommendations of the study will be implemented. As a first level, the Delaware State Board of Education and the Citizens' Advisory Committee will be reviewing the study to determine the portions which they wish to support and present for legislative action. A better assessment of this potential might have been possible if either or both bodies had been directly involved with the NEFP Central Staff and the research team during the conduct of the study, but this was not the pattern of operation. Therefore, these groups are just now studying and analyzing the recommendations to determine their action proposals.

The political acceptability of the study may be somewhat debatable, for the general thrust of the report does not provide legislators and political leaders with the opportunity to gain high levels of recognition. In recommending an effort to revise and improve, rather than to restructure, the staff may have reduced the level of popular appeal, but the proposed changes may be easier to "sell" because of the lack of revolutionary change and the general acceptability of the present state school support program among educational leaders within the state.

As an organizational alternative, members of the State Board of Education and the Citizens' Advisory Committee could have been involved in the study process, serving as a steering group or in advisory committee(s), but this would have required several staff meetings with the group(s). Even though this might have resulted in a higher level of initial acceptance for the report, the alternative was not selected when the study was organized. Additional budgetary allocations would have been required for the meetings, the overall time schedule could not have been maintained, and the research team might have had some difficulty maintaining its independent posture.

In general, the various research components in Financing the Public Schools of Delaware represent a comprehensive effort to provide basic data from which modifications and changes can be proposed for the state's school support program. The Summary and Recommendations section provides direction for policy-makers as they formulate proposed changes. Rather than proposing a bold new program with many untried elements, the study suggests ways in which the existing state school support program can be updated to keep pace with proposed changes in educational funding and fiscal support mechanisms.

APPENDIX A

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